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THE HOW-TO-DO MAGAZINE

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FEBRUARY

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See Page 68

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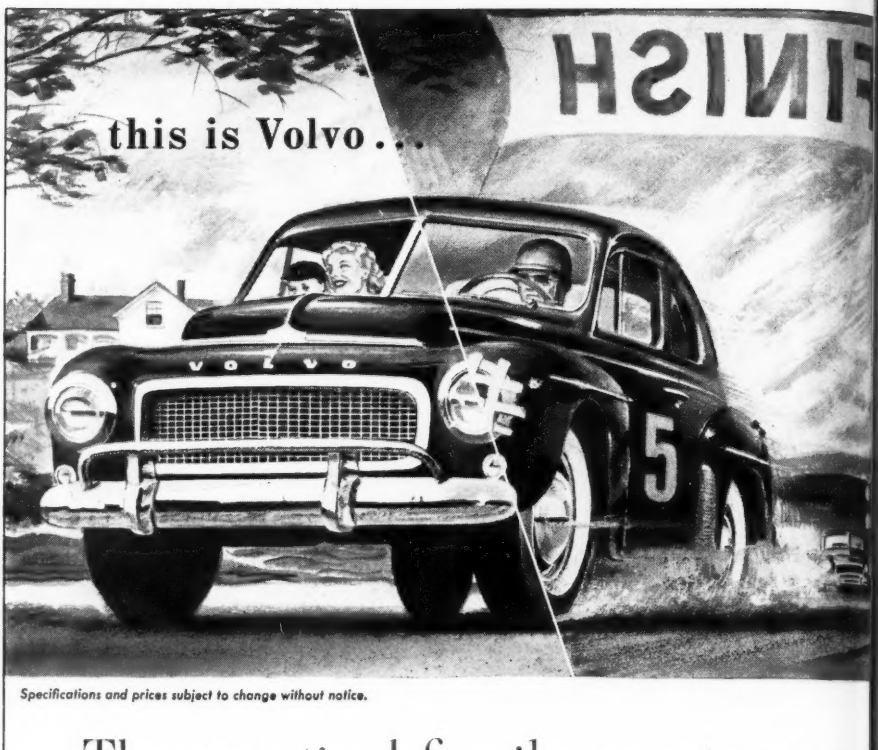

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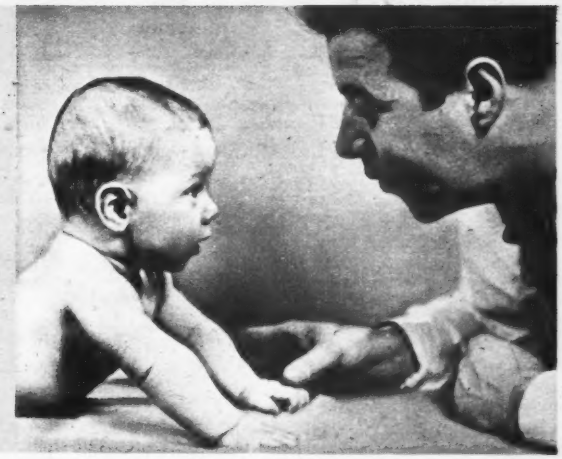

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FEBRUARY 1958

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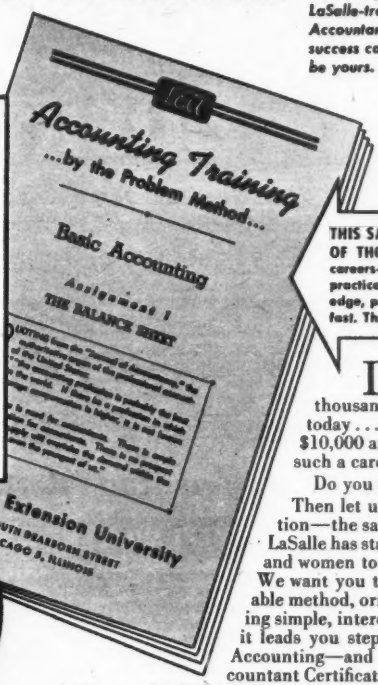

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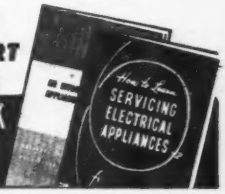

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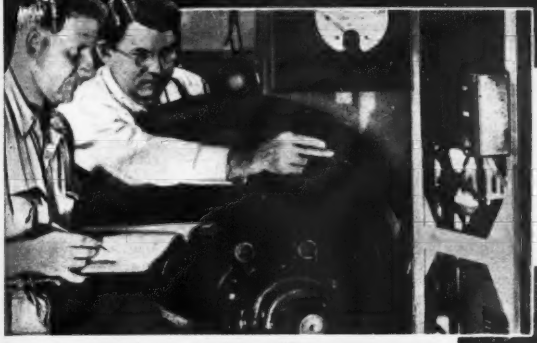

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Train the Coyne way for a better job in *Electricity-Electronics—a field that offers a world of opportunities now and in the years ahead.* In industry—in the home—Electricity and Electronics are playing a vastly greater role than ever before. New developments and rapid growth are creating increasing job opportunities. Automation Electronics—one of the more recent applications of Industrial Electronics to manufacturing processes—promises to create additional demands for trained Electrical-Electronics men such as we have never seen. Electrical Training can be taken separately or combined with Television-Radio. Send coupon for more information.

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Coyne training is offered to Veterans and Non-Veterans alike. We'll send Bulletin giving full information. *Send coupon for details.*

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Great opportunity for a good job or your own business in one of America's fastest growing branches of Electronics! New stations by the hundreds . . . new sets by the millions . . . and now Color TV . . . all means greater opportunities in Sales and Service. Separate courses in Radio-Television or in combination with Electricity-Electronics available. Coupon brings details.

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Coyne Electrical School, Dept. 28-1C
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New Symtronic Method Obsoletes All Others!

NOW! EARN MONEY IN TV SERVICING WITHIN ONE SHORT WEEK!

Make $5 to $10 Per Call IMMEDIATELY!

Here is the announcement our Engineering Staff has waited 5 years to make! Here is the final "break-through" in the television industry's giant efforts to perfect a simplified TV servicing system that eliminates the need for expensive training and long study! If you've thought about learning TV Service and Repair . . . if you've awaited *any* opportunity to have a prosperous, secure business of your own, then this is possibly the most important bulletin you'll ever read!

WHAT *IS* THE AMAZING NEW SYMTRONIC TRAINING METHOD?

Symtronic is a dynamic new concept based on the known fact that **only a certain number of things can go wrong with any given set.** For the first time these troubles, and their causes, have been isolated into three main groups. Through a comprehensive, but easily understood crossindexing system it's now possible to pin-point the trouble in one of the 3 groups in a matter of seconds! What previously required long schooling is now available to you **immediately** through the amazing Symtronic System. Our Free Sample Lesson shows how the Symtronic Method will work on your **own** set, or a friend's. Write for it today!

SYMTRONIC CUTS STUDY TIME . . . SAVES TREMENDOUS EXPENSE!

You want to get started **servicing** TV sets, not **building** them! So, why spend long months studying under old fashioned, outdated methods . . . learning things you'll never use? Why buy lots of equipment to practice with when you don't need it? With the Symtronic System the COMPLICATED TECHNICAL THEORY IS ALREADY TAKEN CARE OF BY OUR OWN SCIENTISTS! There is nothing more you need in this line. What we give you is practical, down-to-earth know-how based on our many years of solid, scientific experience! Our revolutionary Symtronic methods let you compete **immediately** with servicemen who have had years of experience!

FIELD-TESTING PROVES EFFICIENCY OF SYMTRONIC METHOD!

Our exclusive new training technique does not deal with "gimmicks" or "gadgetry." It was perfected over a five-year period by two of the most respected electronic scientists in the TV field, in cooperation with every major TV manufacturer in the United States! Even TV Servicemen trained by the old costly, time-consuming methods, were amazed by our Symtronic training technique. Typical of the general reaction was the comment of Mr. D. B. K., owner of a TV Repair Shop in Reseda, Calif. As he put it, " . . . I only wish your training was available when I went into TV Servicing. Would have started making money a lot sooner . . . Would have saved me hundreds of dollars . . . believe your Symtronic method will revolutionize TV Repair schooling." Furthermore, this dynamic new method was first field-tested among 3000 men and women. Results proved conclusively that anyone of average intelligence could learn to diagnose and service virtually any given malfunctioning set under our system almost immediately! Fantastic? Perhaps, but remember, nearly all significant improvements are based upon simplification. This theory finds its broadest expression in our Symtronic training methods!

SYMTRONIC PUTS YOU IN YOUR OWN BUSINESS NOW!

Imagine—with our amazing training method you know everything needed to handle any make of TV set, within one short week! And, without buying any expensive tools or equipment. You learn at home—spare time. A few evenings of fascinating reading is all it takes. This is **fast** . . . not fiction. In just 7 days or less you will have sufficient knowledge and ability, and confidence in yourself, to make from $5 to $10 per service call—earn $150 a week, working out of your home! Here, unquestionably, is your chance of a lifetime to get into the booming TV business . . . to enjoy the freedom and security that comes with a successful business of your own!

COMPLETE SYMTRONIC BUSINESS PLAN PROVIDES "BLUEPRINT TO SUCCESS"

To make our training program the most practical available, we also offer a complete Business Plan developed by leading advertising and business consultants. Step-by-step, you learn how to get business, how to operate from your home, how to charge, how to keep records, etc.—a complete "Blueprint to Success" that explains fully how to start, conduct, and expand your own TV Service Business. In short, we not only offer the most streamlined, effective TV training available, but a tested and proved Business Plan that eliminates all guesswork. Here, surely, is a "Business Package" that may easily bring you all the good things you desire . . . a practical education with a lifetime of value!

CASH IN ON THIS BIG PROFIT, BIG FUTURE INDUSTRY!

TV servicing is a multi-million dollar industry and it's growing like wildfire! To keep pace, thousands of qualified Servicemen are urgently needed each year. The pay is big and there's no limit to your future success. **Television is here to stay!** In this field, too, you get paid **for what you accomplish,** not how **long** you work. $5 to $10 per call is the usual service charge . . . even though the job may take only a few minutes! Add to this the almost 100% profit on tubes and parts and you can easily see how Symtronic can put you into the big money practically overnight!

APPLY THE SYMTRONIC METHOD TO YOUR OWN SET, OR THAT OF A FRIEND'S — prove to yourself that our amazing Symtronic method is all we say. What better proof exists! Send us your name and address today, and we'll rush you a free sample lesson along with complete information on our Symtronic training technique. Read this lesson carefully . . . apply it to your own set or a friend's, and you'll convince yourself that the Symtronic method can bring you a successful TV Servicing Business within one short week! Clip and mail coupon today—**supply of free lessons is limited!**

FREE!
SAMPLE LESSON PROVES SYMTRONIC METHOD WORKS!

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Please rush proof that your Symtronic TV Training Method is all you say. Send Free Lesson and complete details, without obligation. (No salesman will call.)

Name .....

Address .....

City..... Zone... State.....

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If you are experienced in selling Education Programs we invite your immediate inquiry. Personal demonstrations of the amazing L. S. Symtronic Simplified System sells it on sight. Individuals, TV stores and Appliance Houses all consider it a MUST! Write for details.

New Rubber Stamp Business Pays Beginners UP TO $9.20 an hr.

Start at home in spare time with this little table top machine

The multi-million dollar Rubber Stamp Business—once controlled by a few big companies—is now being taken over by small home operators—one in each community throughout the U.S. Men and women who have this inexpensive machine can turn out huge quantities of Rubber Stamps with special wording that buyers once were forced to order from big cities. Material costing only 27c makes a stamp that sells for $1.80. The machine that does the work is simple and easy to operate and it turns out as many as six Rubber Stamps at a time each with different wording such as names, addresses, notices, stock numbers, prices and other "copy" needed by offices, factories and individuals. Working full capacity, it can earn as much as **$9.20 an hour for the operator!** Now you can get into the big-pay business yourself, with your own home as headquarters. You don't need any experience. We supply everything, including complete instructions and eight ways to get business coming in fast. Start making up to $9.20 an hour from the very beginning. Cash in on the profitable Rubber Stamp business in your community right away.

● Read the complete and fascinating Rubber Stamp story in a big 110-page Book recently published by the Warner Electric Company. The Book is profusely illustrated with more than 100 pictures and photographs. *And you can read it for a full two weeks without risking a penny of your own money!*

NEW WARNER SUCCESS PLAN

Here's what the new WARNER PLAN Tells You about Making Money with RUBBER STAMPS

1. **HOW TO** have fun **now** and at the same time provide for a secure and prosperous **future.**
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3. **HOW TO** acquire a general knowledge of the business based on a brief history of the Rubber Stamp.
4. **HOW TO** visualize the scope of the Rubber Stamp market.
5. **HOW TO** make a Rubber Stamp (general outline).
6. **HOW TO** assess the value of Warner Equipment.
7. **HOW TO** get acquainted with the "Tools of your Trade."
8. **HOW TO** make a Rubber Stamp (Specific procedure).
9. **HOW TO** mount a vulcanized Rubber Stamp.
10. **HOW TO** make "Special" Rubber Stamps.
11. **HOW TO** cut plastic Matrix Board for the chase.
12. **HOW TO** get the right price for the Rubber stamps you make.
13. **HOW TO** price your complete Rubber Stamp Line.
14. **HOW TO** figure costs so you will be sure of a substantial profit on all the work you turn out.
15. **HOW TO** set up your workshop.
16. **HOW TO** get the most out of Warner's "Eight Tested Sources for Getting Business."
17. **HOW TO** operate at peak efficiency when YOU ARE YOUR OWN BOSS.
18. **HOW TO** get started on a cash outlay so small that *you can get back your entire investment inside of two weeks.*

110 PAGES MORE THAN 100 PICTURES

●

Now Ready to Mail Tell Me Where to Send Your Copy

See **COUPON**

Tells How to Build—Step by Step—to Big Profits and Personal Independence

Read This Plan for Two Weeks ENTIRELY AT MY RISK!

In this amazing Plan you will find exact and detailed instructions for starting a Home Business in spare time—without giving up your present job and without risking the loss of a single pay check. The Warner Plan shows you—with pictures, photographs and drawings—just how to make Rubber Stamps just as good as those turned out by the big companies. It shows how to get orders without canvassing or house-to-house selling. It shows you how to expand, how to get others to work for you and how to be SURE of at least twice the money you make on your present job for a life of personal independence.

But don't make any decision now. Read the Plan **first**—entirely at my risk. Then—after you have made a careful investigation—after you have talked things over with your family—only then do you decide what you want to do.

The thing to do now is to get full details which I'll send you FREE. No salesman will call to urge you to buy anything. Mail coupon today—or just send a postcard—and I'll see that complete information goes out to you by return mail—postpaid.

RUBBER STAMP DIVISION, Dept. R-4-B,
1512 Jarvis Avenue, Chicago 26, Illinois

RUBBER STAMP DIVISION, Dept. R-4-B, ***Send No Money***
1512 Jarvis Avenue, Chicago 26, Illinois

Please rush full particulars about the little machine that can get me started in the profitable Rubber Stamp Business at home in spare time. Everything you send me is FREE. No salesman will call.

NAME_____

ADDRESS_____

CITY_____ZONE____STATE_____

MI HOME ★ CRAFTS ★ SHOP

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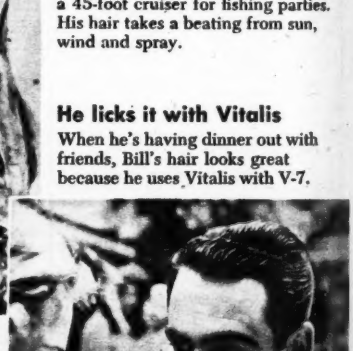
He licks it with Vitalis

When he's having dinner out with friends, Bill's hair looks great because he uses Vitalis with V-7.



New greaseless way to keep your hair neat all day...and prevent dryness

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So take stock of yourself—your job today—your competition for promotion—your possibilities for advancement.

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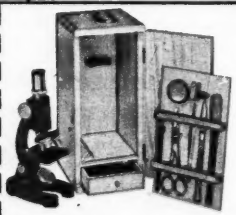

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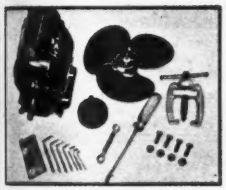

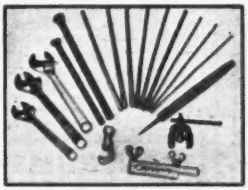

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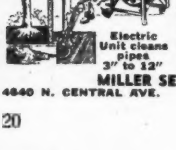

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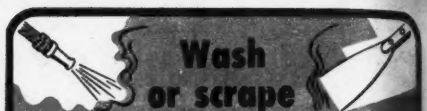

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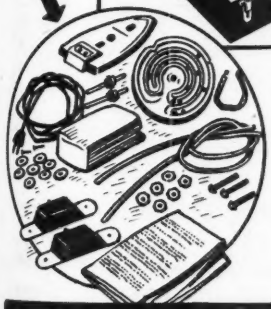

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A patent gives the inventor the exclusive right to prevent others from making, using, or selling the invention claimed in the patent for a period of seventeen years.

The Patent Laws were enacted for the benefit of the inventor to give him protection for the features of his invention which are patentable. These features must be properly and concisely set forth and claimed in a formal application for patent, in order to comply with the requirements of the Patent Laws. For that reason, unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and are prepared to serve you in the handling of your patent matters.

A specially prepared booklet entitled "Patent Guide for the Inventor", containing detailed information with respect to patent protection and procedure, together with a "Record of Invention" form will be promptly forwarded to you without obligation upon request.

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Invention Clinic

Joseph H. Kraus

In this column each month Mr. Kraus will answer as many letters as space permits on those subjects he feels to be of widest general interest. Time does not allow him to reply to any letters except those printed here. Address your questions to the Invention Clinic, *Mechanix Illustrated*, 67 West 44 St., New York 36, N. Y.

Target Apparatus

David T. Perkins of Sacramento, Calif., sends drawings and details for a target electrically coupled to a sub-target on which the location of the hits are registered. What do we think of the system and its proposed operation? Should this invention be sold before a patent is granted?

The idea of producing a simple electrical target registering device is excellent. But we are not convinced that you have anything which will give even a reasonably accurate record. Any metal flexible enough to yield as you expect it to do will also dent, hence maintain the contact. There is nothing unique in your present circuitry. Nevertheless, if you can come up with a good system you should be able to find a market for it. If a manufacturer will agree to purchase your invention before you patent it, there is no reason why you shouldn't accept a satisfactory offer. The safest procedure, however, is to first make sure you have a good, workable invention, then patent it and sell it.

INVENTOR'S TIP OF THE MONTH

The person who develops a non-messy paint remover which will quickly strip paint and varnish right down to the bare wood is assured of a good market for it. The best method might be a paper or plastic tape. Applied to a wood or metal surface it would then be peeled off, bringing the paint covering with it. The paint softening chemicals might be contained in the tape backing, or be applied in liquid form.

Hay Pelletizing Machinery

John Hazelwood of Dublin, Ind., feels that he has the knowledge and technical skill to build hay pelletizing equipment if we recommend it. What is our advice?

You seem to have armed yourself with sufficient bibliographical background to recognize the advantages obtainable from hay pellets as against baled hay, or silage. If you now can develop an economically sound answer to the problem of converting hay into pellet form, you might have the basis for a number of patents and an industrial development program. Remember, however, that many others are working on this problem. If it costs two or three times as much to feed an animal with pelletized hay as it does with baled hay or silage, you can do little with your project.

You might discuss your plans with authorities of the highly reputable Purdue University School of Agriculture. Your worm feed, for example, might advantageously be replaced with a blower feed which would give a cleaner project and might help drying. This is a worthwhile project if you can find the right answer to its economics.

Compensation

J. J. Carroll of Johnson City, N.Y., has an idea for an advertising scheme. How can he present it to a prospective user in such a way that if it is used he will be compensated for it?

Talk to an officer of the company. Then ask that a contract be drawn up specifying that if his company uses your scheme you will be compensated for the use of the idea. Have your attorney examine the contract and advise you. After both parties to the agreement have signed it you are in a position to disclose

[*Continued on page* 28]

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for patent.

Unless you are fully familiar with the U. S. Patent Laws, we recommend that you engage the services of a Registered Patent Attorney to protect your interests. The patent laws are *your* laws. A patent gives you the right to prevent others from making, using or selling the invention claimed in your patent for a period of 17 years.

Use these patent laws for your protection. Investigate whether your invention can be patented. If you have what you believe to be an invention, we suggest that you have this firm make a search for you.

Send for a copy of our Patent Booklet entitled "How To Protect Your Invention," containing information about patent protection and patent procedure. Along with this we will also send you an "Invention Record" form, for your use in writing down and sketching details of your invention. We will mail them promptly. No obligation. They are yours for the asking.

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[*Continued from page* 26]

your plan to the company without fear.

This is not an easy agreement to reach. If your scheme is something like the example you cite, there would be little hope of selling it. Carbonated beverages were bottled before they were available at soda fountains. It is a perfectly normal development to switch from one to the other, and in either direction.

Reversible Jet Engines

B. A. Robertson, APO, New York, N.Y., has been "working on one of the toughest problems of the jet age," a system of producing 100 per cent thrust reversal in jet engines. What steps should he take to protect the work he already has done? What assistance can he get for research and needed tests?

You could apply for a patent on your system, even though you have not yet proved its effectiveness. Then, depending on your technical background, you may be in line for various kinds of assistance. For example, if you were returning to college, you might be able to get a research grant through your institution from a foundation. Much depends on how technically sound your proposal is and how basic is your patent. Of course, it should be something which has not been tried before and found impracticable. Much work has been and is being done in this field.

Potato Peeler

Universal Industries of Somerville, Mass., sent us a copy of a letter to M. G. Derstine, whose inquiry about a potato peeler to fit a household mixer was answered in Sept. MI. The company reports, "We manufactured such an item several years ago but have discontinued it."

This fact was strongly implied in our analysis of the potato peeler. However, this inventor seemed to have one of the answers to the very thing which makes the average household potato peeler a nuisance.

Here is a basic rule for proposed household devices and gadgets: If a household device requires considerable time to set up, operates more slowly than the simple hand tool it is to replace, and takes time to clean and put away, it has little chance for success.

[*Continued on page* 32]

INVENTORS

The preparation of an application for patent and the conducting of the proceedings in the Patent Office to obtain the patent is an undertaking requiring knowledge of patent law and Patent Office practice as well as knowledge of the scientific or technical matters involved in the particular invention.

Unless you are familiar with these matters, you are advised to call upon the knowledge, experience and skill available to you from a registered patent attorney or agent in order that the patent, if obtained, will adequately protect your invention.

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Let us send you a copy of our instructive booklet "Patent Protection for Inventors" which explains pertinent points concerning procedures which must be followed and how this firm acts in your behalf. We also will send "Evidence of Invention" disclosure form (with instructions for proper use) to help you take the first step toward securing a patent—a search among previously granted U. S. patents for similar types of inventions to determine probable patentability. Booklet and form sent without obligation.

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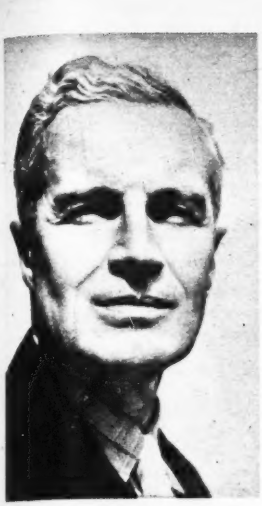

I'd like to give this to my fellow men...

while I am still able to help!

I was young once, as you may be—today I am older. Not too old to enjoy the fruits of my work, but older in the sense of being wiser. And once I was poor, desperately poor. Today almost any man can stretch his income to make ends meet. Today, there are few who hunger for bread and shelter. But in my youth I knew the pinch of poverty; the emptiness of hunger; the cold stare of the creditor who would not take excuses for money. Today, all that is past. And behind my city house, my summer home, my Cadillacs, my Winter-long vacations and my sense of independence—behind all the wealth of cash and deep inner satisfaction that I enjoy—there is one simple secret. It is this secret that I would like to impart to you. If you are satisfied with a humdrum life of service to another master, turn this page now—read no more. If you are interested in a fuller life, free from bosses, free from worries, free from fears, read further. This message may be meant for you.

By Victor B. Mason

I am printing my message in a magazine. It may come to the attention of thousands of eyes. But of all those thousands, only a few will have the vision to understand. Many may read; but of a thousand only you may have the intuition, the sensitivity, to understand that what I am writing may be intended for you—may be the tide that shapes your destiny, which, taken at the crest, carries you to levels of independence beyond the dreams of avarice.

Don't misunderstand me. There is no mysticism in this. I am not speaking of occult things; of innumerable laws of nature that will sweep you to success without effort on your part. That sort of talk is *rubbish!* And anyone who tries to tell you that you can *think* your way to riches without effort is a false friend. I am too much of a realist for that. And I hope you are.

I hope you are the kind of man—if you have read this far—who knows that anything worthwhile has to be *earned!* I hope you have learned that there is no reward without effort. If you have learned this, then you may be ready to take the next step in the development of your karma—you may be ready to learn and use the secret I have to impart.

I Have All The Money I Need

In my own life I have gone beyond the need of money. I have it. I have gone beyond the need of gain. I have two businesses that pay me an income well above any amount I have need for. And, in addition, I have the satisfaction—the deep satisfaction—of knowing that I have put more than three hundred other men in businesses of their own. Since I have no need for money, the greatest satisfaction I get from life, is sharing my secret of personal independence with others—seeing them achieve the same heights of happiness that have come into my own life.

Please don't misunderstand this statement. I am not a philanthropist. I believe that charity is something that no proud man will accept. I have never seen a man who was worth his salt who would accept something for nothing. I have never met a highly successful man whom the world respected who did not sacrifice something to gain his position. And, unless you are willing to make at least half the effort, I'm not interested in giving you a "leg up" to the achievement of your goal. Frankly, I'm going to charge you something for the secret I give you. Not a lot—but enough to make me believe that you are a little above the fellows who merely "wish" for success and are not willing to sacrifice something to get it.

A Fascinating and Peculiar Business

I have a business that is peculiar—one of my businesses. The unusual thing about it is that it is needed in every little community throughout this country. But it is a business that will never be invaded by the "big fellows". It has to be handled on a local basis. No giant octopus can ever gobble up the whole thing. No big combine is ever going to destroy it. It is essentially a "one man" business that can be operated without outside help. It is a business that is good summer and winter. It is a business that is growing each year. And, it is a business that can be started on an investment so small that it is within the reach of anyone who has a television set. But it has nothing to do with television.

This business has another peculiarity. It can be started at home in spare time. No risk to present job. No risk to present income. And no need to let anyone else know you are "on your own". It can be run as a spare time business for extra money. Or, as it grows to the point where it is paying more than your present salary, it can be expanded into a full time business—overnight. It can give you a sense of personal independence that will free you forever from the fear of lay-off, loss of job, depressions, or economic reverses.

Are You Mechanically Inclined?

While the operation of this business is partly automatic, it won't run itself. If you are to use it as a stepping stone to independence, you must be able to work with your hands, use such tools as hammer and screw driver, and enjoy getting into a pair of blue jeans and rolling up your sleeves. But two hours a day of manual work will keep your "factory" running 24 hours turning out a product that has a steady and ready sale in every community. A half dollar spent for raw materials can bring you six dollars in cash—six times a day.

In this message I'm not going to try to tell you the entire story. There is not enough space on this page. And, I am not going to ask you to spend a penny now to learn the secret. I'll send you all the information, free. If you are interested in becoming independent, in becoming your own boss, in knowing the sweet fruits of success as I know them, send me your name. That's all. Just your name. I won't ask you for a penny. I'll send you all the information about one of the most fascinating businesses you can imagine. With these facts, you will make your own investigation. You will check up on conditions in your neighborhood. You will weigh and analyze the whole proposition. Then, and then only, if you decide to take the next step, I'll allow you to invest $15.00. And even then, if you decide that your fifteen dollars has been badly invested I'll return it to you. Don't hesitate to send your name. I have no salesmen. I will merely write you a long letter and send you complete facts about the business I have found to be so successful. After that, you make the decisions.

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VICTOR B. MASON
1512 Jarvis Ave., Suite M-4-B
CHICAGO 26, ILLINOIS

Dear Editor

Address mail to: MECHANIX ILLUSTRATED, Letters Editor, 67 West 44th Street, New York 36, N. Y.

• *All About Mimi*

About that Mimi the Gadget Girl in your Jan. '58 issue. What is her real name?

J. Daniel Stuart Daniel
Houston, Texas

Mimi

That Mimi—great!

Stan Shaw
Los Angeles, Calif.

Mimi, I love you!

Robert Denning
St. Louis, Mo.

Is Mimi married?

K. L. Bascom
New Orleans, La.

Only to MI.

That Mimi is okay. I'd like to see more of her.

David Baker
Miami, Fla.

You will, Dave. Just watch for her in every issue of MI.

• *February MI Mystery*

A certain number consists of three digits. If the first and the third digits are interchanged the number is increased by 396. The sum of the digits is 9. Three times the first digit is equal to the second digit. What is the number?

Bill Cunningham
Tallahassee, Fla.

• *MI Grasshopper*

Late last summer I saw your magazine in a drug store window and somehow a grasshopper had got in and was sitting on the cover just below the title. There it was as big as life—MECHANIX ILLUSTRATED. Didn't have a camera to catch the scene, but thought it might be amusing to your readers.

Mrs. Phoebe Davies
Suffolk, Va.

• *Dilemma Solved*

I am a teacher of Industrial Arts in a local school and have been a reader of your magazine for a number of years. However, I have never had an issue that did not contain many articles that I wanted to cut out and take to school to use in my classes—but it seems that in each issue there are several articles that are either back-to-back or are continued to the same page. This creates a very frustrating problem in that I have to discard one

[*Continued on page* 37]

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WOOLWORTH BLDG., 36th FLOOR, 288
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Invention Clinic

[*Continued from page* 28]

Auto Visors—Bottle Opener

J. Moorman of Watsonville, Calif., suggests a visor for use by back seat passengers in an automobile, a toilet seat cover which may be carried about and re-used, and a key-ring bottle opener. Which of these ideas would "pan out"?

None of them. You cannot patent the place where you expect to locate a visor. Any company or individual can locate a visor anywhere he pleases. A study will show that visors once were in use by back seat passengers.

The toilet seat cover idea is poorly thought out. A seat cover is for sanitation. Your proposal provides multiple exposure to any contamination which may be picked up from the seat, then makes sure that you serve as an agent to spread the contamination. Also, during the process of folding for subsequent reuse, you are likely to spread the contamination on your own hands, and incubate it in the pocket or carrying bag, so that it can really go to work the next time the cover is to be used.

Key-ring bottle openers are on the market. You gave no design drawings so potential value cannot be judged.

Wheel Barrel Incinerator

Hans von Wurmb of Spring Valley, N.Y., sends drawings of a wire basket incinerator to be used for dry leaves and garden refuse. A search discloses another patent. He feels that his invention has advantages over the one patented.

Not in our opinion. There is nothing to prevent the inventor of the presently patented refuse collector from making his collector from wire cloth or perforated metal to permit

[*Continued on page* 34]

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Invention Clinic

[*Continued from page 32*]

burning within the collector. Fundamentally, both your device and his operate in the same fashion. So does a clam shell bucket. Your design is too complicated. If you really want to produce something useful, design a simple article which will get rid of green cuttings, damp leaves, weeds and small brances, without damaging grass or other planted areas.

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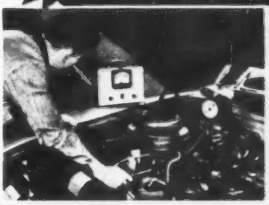

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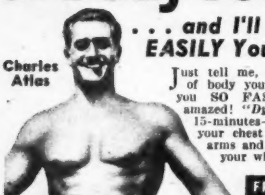

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Dear Editor

[*Continued from page* 30]

good article to save another. I also read and collect the (Censored) and (Censored) magazines and I never seem to have any similar troubles with these publications. I know of several teachers who feel the same way as I do. Couldn't something be done about this?

J. A. B.
Jamestown, R. I.

Well, Jon, the obvious solution is to buy a copy of MI for every student in your class. Regarding your "frustrating problem," we'd like to point out that MI has so darned many interesting articles in every issue that it is impossible to separate them. The reason that you don't have this problem with the (Censored) and (Censored) magazines is that they don't. Simple, no?

• *December Mystery Solved*

Mystery: Two planes, one above the other, are flying due west over two plane watchers, A and C. C is located four miles due west of A, measured horizontally. When the planes are vertically above C, A observes an angle of 12° between the two planes and the top plane is one and one-quarter miles, vertically, above the lower plane. How high is the lower plane above C and what angle does it make with the horizontal, measured from A.

Solution: The lower plane is 2.188 miles above C. The angle it makes with the horizontal, measured from A, is 28° 40′ 49″.

Chester Hill
Winnipeg, Manitoba
Canada

• *SBA*

This office thoroughly enjoyed your article Uncle Angel: The Inventor's Pal in the Nov. '57 issue of MI and from the numerous inquiries received, it appears that the article was of great interest to many of your readers. However, the correct address of the Detroit Regional Office of the Small Business Administration is 211 West Congress, Detroit, Mich.

E. H. Sorvari, Chief
Procurement & Technical Assistance
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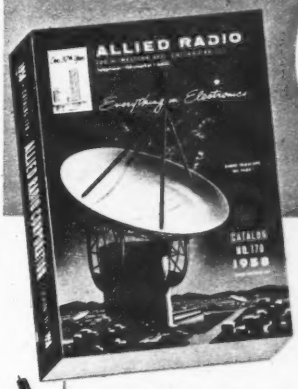

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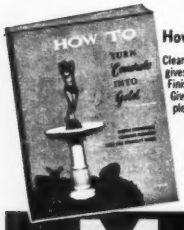

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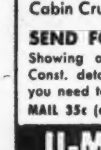

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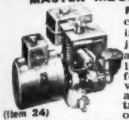

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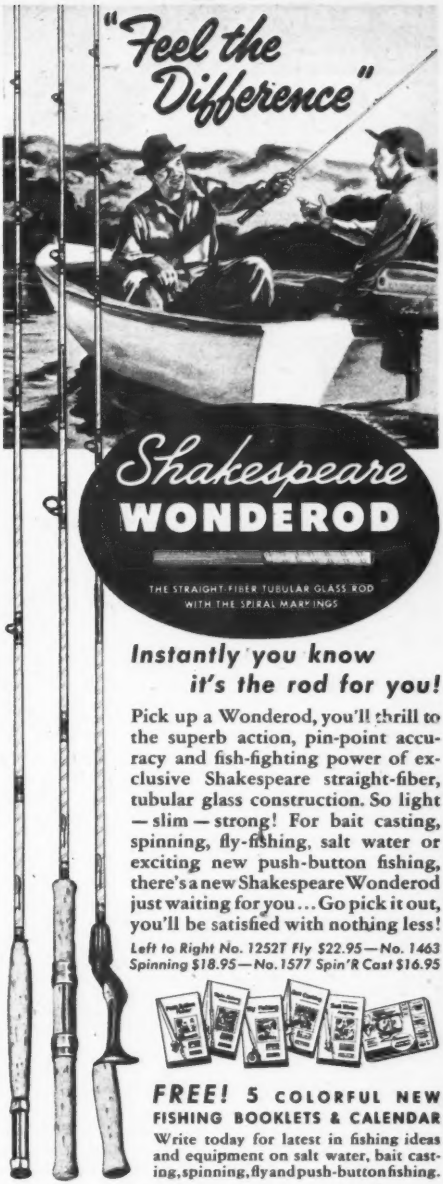

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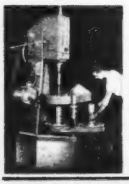

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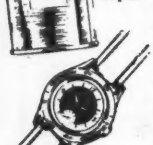

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Others following my plan report: . . . orders for a total of $8000.00, writes O. Simcock; have imported Kokeshi Dolls from Japan – J. McDonald; . . . sold over 600 Indian Zari purses – M. Bowman; . . . wife and I represent four local manufacturers in Export – L. Parry; . . . exported large quantity of honey – O. Seymour; . . . importing Aztec Indian bird feather pictures from Mexico – F. Balser.

You might ask, "Why do you let others in on your plan? Why don't you keep it all for yourself?" The answer is that the items for import are countless and that the demand for these exotic items is virtually impossible to fill. No one person could possibly handle even a small portion of this gigantic market. There's plenty of business in import-export for you and me and many others.

If you are sincere and really open-minded to a new and different opportunity – one which may change your whole idea of the kind of money you can make full or part time in your own Home-Import Business – write today for full details and a free list of 157 imports, showing the amazingly low foreign prices. Air mail reaches me overnight.

B. L. Mellinger, Director, Dept. P262,
1717 Westwood, Los Angeles 24, Calif.

AIR MAIL COUPON NOW!

B. L. Mellinger, The Mellinger Co., Dept. P262,
1717 Westwood, Los Angeles 24, Calif.

Mr. Mellinger: Without obligation, show me the big profits to be made through World Trade, especially in mail order from my own home. Also, please rush me your list of 157 imports, showing amazingly low foreign prices.

Print Name _____
Address _____
Town & Zone _____ State _____

M Classified Ads

Your advertisement can reach this mail-buying audience of a million readers and more for only $1.00 per word . . . payable in advance (Check or M.O. please) . . . minimum 10 words. Copy to be inserted in April issue must be in the office February 3. Mail to MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N. Y. Word count: Zone number free. Figure one word: Name of state (New Jersey), name of city (New York); sets of characters as in key (14-D); also abbreviations as 35MM, 8x10, D.C., A.C.

SAVE MONEY • ORDER BY MAIL

. . . ADVERTISING & BUSINESS SERVICES

ADVERTISE: 24 WORDS, 100 Canadian Newspapers, $5.50. Lists Free. Advertising Bureau, 10511-B Springfield, Chicago 43.

MAILING LISTS. Most all kinds, 1000, $5.00. Your circulars mailed with ours 1000, $4.00. Free details. Dixie Mailers, King, N. C.

100,000 PRODUCTS WHOLESALE—Free Catalog! Send postcard: Econ-O-Mart, Whippany 20, N. J.

. . . AGENTS WANTED

AMAZING GREETING Card Money-Maker—Make $75.00 on 100 Deluxe $1.25 Assortments. Newest 21 for $1 Tall Cards, Gift Novelties, 133 fast sellers. Gift Bonuses besides biggest profits. Experience unnecessary. Stationery samples Free, others on approval. $1.25 Gift for prompt action. Creative Cards, 4401 Cermak, Dept. 511-H, Chicago 23.

SHINE CARS Without "Polish." New invention. Lightning seller. Cars gleam like mirror. Samples sent on trial. Kristee 76, Akron, Ohio.

YOUR OWN business—Suits $1.50; Overcoats 65c; Mackinaws 35c; Shoes 12½c; Ladies' Coats 30c; Dresses 15c. Enormous profits. Catalog Free. Nathan Portnoy Assoc., 605-M West 12th Place, Chicago 7, Ill.

FREE SAMPLE! Beautiful Feather Pictures. Sylviam, Apartado 9036, Mexico 1, D. F.

WHOLESALE! CLOTHING, appliances, jewelry, etc. Free Catalogs! United Wholesalers, 1265-X Broadway, New York 1, N. Y.

BUY WHOLESALE! Over 10,000 Nationally Advertised Products. Appliances, Cameras, Sporting Goods, Housewares, Watches, Typewriters, Tools, Clothing, etc. Send Postcard Today. Buy-Rite, Box 250, Hawthorne 22, N. J.

EVERY MAN a prospect. Request free sales kit showing line of belt buckles, individualized with customer's name and emblems, also cap badges for trucking, bus, taxi, police, firemen. Choice 3000 emblems. Hook-Fast, Box 1425MI, Providence, R. I.

START A World's Drop-Ship business at home. No capital required. Up to 1000% profit! Write Glass, Ellwood City 12, Penna.

YOUR OWN Wholesale Buying Service. Buy for clients the "best" at the "lowest." America's biggest money making deal. Free details. Associated Wholesalers, Box 52-MX, Burlington, Iowa.

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PRINTING, ADVERTISING Salesmen—Excellent moneymaking sideline selling Decalcomania Name Plates, small quantities. Automobile initials, Sign Letters. Free Samples, "Raico," XL, Boston 19, Mass.

MAKE MONEY selling hosiery by mail at home, spare time. Amazing sheer nylon stockings (not sold in stores) guaranteed 8 months. Receive dollar bills and keep them! We deliver and collect balance. Self-selling circulars, mail order buyers' names supplied. Details free. Dept. 113, Kendex, 108 Lawrence St., Brooklyn 1, N. Y.

BUY WHOLESALE—25,000 Items—Catalog 25¢. Matthews, 1472-D5 Broadway, New York City 36.

CASH COMMISSIONS at once, taking orders for magazines every family wants! No experience needed. For Free money-making kit, with everything you need, write McGregor Magazine Agency, Dept. 360, Mount Morris, Ill.

SAVE MONEY! Buy Wholesale! Free catalog, general merchandise. Norris, 487-J Broadway, New York.

EARN BIG money full or part-time. Quickie Spray shines all leather instantly without buffing, brushing. Be first! Rush refundable $1.00 for demonstrator, selling kit. Franchises available. James R. Barnet Co., Dept. MI-28, Wellesley Hills 81, Mass.

$25 DAY, EASY. New fire extinguisher. Retails $2.95. Profit $2.00. Free Sales kit. Edconco, 155 East 44th Street, Dept. M-2, New York 17, N. Y.

GOLD OR Silver Letters, Numbers. Windows, Doors, Trucks. 1" to 6". 500% Profits—Free Samples. Atlas-R, 544 West 79th, Chicago 20.

$1,000 A MONTH for making dramatic 3-second demonstration of amazing lightweight Presto Fire Extinguisher. New chemical used by Airforce snuffs out fires instantly. Only $4.95. Terrific commissions. Millions want it. Free Kit. Merlite, 114 E. 32nd, Dept. P-66F, New York 16.

YOURS ONLY 10¢—beautiful 21 card assortment. Offered to prove you can make $50-$200 selling newest greeting cards. Send no money. Write for this bargain, other Feature assortments on approval. If not delighted return outfit, keeping $1.25 box for 10¢. New England Art Publishers, North Abington M-26, Mass.

IT'S EASY to sell our big line business printing, calendars, advertising specialties and political advertising. Big cash commission each sale, even first day. Full or part time. Experience unnecessary. Prospects unlimited. Big sales kit free. National Press, Dept. 2, North Chicago, Ill.

FREE "$5,000-$45,000; UNLIMITED Vacations." No merchandise! Work home! Haylings-M7, Carlsbad, Calif.

SEEKING NEW Products? Get my outfit 47 money-making specialties. Latest conveniences for home, car. Send no money. Just your name. Kristee 77, Akron, Ohio.

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SALESMEN! GUARANTEED increase in closures, $1.00. Educational Sales Presentation, P. O. Box 1820-M, San Francisco, Calif.

MAKE EXTRA Money. Cash commissions. Everybody buys easy-to-sell Advertising Book Matches. Union label. Big variety—Glamour Girls, Scenics, Hillbillies. Powerhouse selling kit Free. Steady repeat business. No experience necessary. Superior Match Co., Dept. F-258, 7528 S. Greenwood, Chicago 19.

ANYONE CAN Sell famous Hoover Uniforms for beauty shops, waitresses, nurses, doctors, others. All popular miracle fabrics—nylon, dacron. Exclusive styles, top quality. Big cash income now, real future. Equipment free. Hoover, Dept. B-102, New York 11, N. Y.

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$1,000 A MONTH for making dramatic 3-second demonstration of amazing lightweight Presto Fire Extinguisher. New chemical used by Airforce snuffs out fires instantly. Only $4.95. Terrific commissions. Millions want it. Free Kit. Merlite, 114 E. 32nd., Dept. P-66F, New York 16.

IF YOU'RE interested in making money in selling, see the hundreds of exceptional opportunities in Salesmen's Opportunity Magazine. Send name for your copy, absolutely free. Tell us what you're selling now. Opportunity, 848 N. Dearborn, Dept. 19, Chicago 10, Ill.

MY FREE Outfit Puts You In A Fine Business! Just 8 easy orders a day brings you up to $960 *extra* a month in Big Money shoe business! Complete line of Air Cushion shoes for men, women. Rush postcard for your powerful Free Selling Outfit! Mason, Chippewa Falls 61, Wisc.

MI Classified Advertisements

AD MATCHES! Sell amazing designs—10, 20, 30, 40 and 240-light book matches. Bigger spot cash commissions; every business a prospect. Low prices for high quality. Repeats. Start without experience; men, women; full, part time. Buy nothing! Sales kit furnished. Match Corp., Dept. MI-82, Chicago 32, Ill.

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WILL YOU wear new suits and topcoats without one penny cost and agree to show them to friends? You can make up to $30.00 in a day even in spare time, without canvassing. J. C. Field & Son, Inc., Dept. U-1826, Harrison & Throop Sts., Chicago 7, Ill.

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YOUR OWN name brand business. No investment; no inventory. Part time or full time. Sell famous brands of appliances, housewares, silverware, radios, vacuum cleaners, lamps, tools, clocks, watches, jewelry, etc., etc., over 1,000 items. Join thousands of successful independent dealers. Send for Free catalog and dealer price list. H. B. Davis Corp., Dept. 16, 145 W. 15 St., New York City.

BREED RARE Tropical Fish At Home. Earn Big Money! Learn Secrets! Help fill huge demand. Amazing Opportunity! Free Plan. Tropicals, Los Angeles 61, Calif.

FREE FOLIO "$5,000-$45,000; Unlimited Vacations." No merchandise. Unknown! Work home! Haylings-M7, Carlsbad, Calif.

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VALUABLE DISTRIBUTORSHIP throughout United States With exceptional high rate of earnings. A business established over 20 years with 200,000 users. Investment $8,500-$12,500. Box 1457, 1501 Broadway, New York.

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LEARN PHOTO-NEGATIVE (Portrait) retouching. Men, Women. $5 hour possible spare or full time at home. Easy, glamorous. Work for Photographers by mail order. Full details sent Free. Duval, 100 So. Vermont, Los Angeles 4.

GROW A living Miniature Forest or orchard (only inches high), that bears tasty tiny fruit at home. Learn amazing Dwarfing secrets! Sensational Fascinating hobby, $$$$$ Home-business Opportunity. Free Details! Miniature Nurseries, Dept. FY, Gardena, Calif.

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YOUR ENVELOPES addressed accurately, reasonably. Fast service. We have capable addressers in your city. Glenway System, Box 6568, Cleveland 1, Ohio.

BRUSH PLATING Outfits for plating articles in the home and shop. No tanks necessary, silvering mirrors, spare or full time. Free particulars. Gunmetal Co., Ave. A, Decatur, Ill.

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11,000 NEW PROSPECTS Daily. Baby record books, shoes, albums. Sell mail-order. Use our literature. Write: No-Co-Ro, Capitola 16, Calif.

FREE FOLDER. "How to Make $3,000 Yearly, Sparetime, Backyard, Raising Earthworms!" Oakhaven 45, Cedar Hill, Texas.

VENDING MACHINES—No selling. Operate a route of coin machines and earn amazing profits. 32-page catalog Free! Parkway Machine Corporation, Dept. 2, 715 Ensor St., Baltimore 2, Md.

GROW EXPENSIVE Herbs For Us! Big Profit Home-Business of your own. Year around profitunity! We supply everything necessary! Send for Free Amazing Facts And Revealing Plan. National Herb Exchange, Box FY, Gardena, Calif.

"THEY HAND Him $100!" Free Packet "Secret Journal." 919 Secrets—Plans! Work home. Publico-JJ, Oceanside, Calif.

$250.00 WEEK SPARE time profit possible. Earn at home with new fascinating Printing method. $5 starts you—send no money now. Free Confidential Facts and Valuable Samples. Screen-Print, FY, Los Angeles 61.

MAKE STRANGE plastic building material of waste, easily. Water, fire, wear and termite resistant. Bays Laboratory, Oklahoma City 9.

YOU CAN Make Money at home in spare time taking magazine renewal subscriptions. No capital or experience necessary. All supplies furnished. Write Today! McGregor Magazine Agency, Dept. 370, Mount Morris, Ill.

MAIL ORDER—positive profit home business now possible. Advertising agency executive reveals success formula. Operate without inventory, no-risk advertising. Details free: Impact! 3407 Prospect Avenue, Dept. 3-2, Cleveland 15, Ohio.

GROW ORCHIDS at home. Profitable, fascinating. Successful home grower explains special light, temperature and humidity conditions orchids need. Free-full details. Orchids, 100 S. Vermont, Los Angeles 4.

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BUY AT Wholesale Prices! Resell at Big Profits. Brand name merchandise—Appliances, cookware, housewares, watches, jewelry, rings, dry goods, clothing, luggage, tools, sporting goods, toys, gifts, etc. Free 1958 color catalog. Write today. Merit Home Products, Dept. M-3, 107 Manhattan Ave., Brooklyn 6, N. Y.

QUICK PROFITS, with no capital! Take orders for magazines your neighbors like, want. Make cash on the spot! We show how with Free kit. Get yours now. Write McGregor Magazine Agency, Dept. 370, Mount Morris, Ill.

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WANTED: HOME producers, to be subcontractors. Cast plastic products for manufacturers in our Clearing House Service. Thousands of easily-made items required. Cash in at home, without previous experience. Plastic Service Associates, Dept. 2-MI, East Boston 28, Mass.

FREE "FRANCHISE Profit Letter" describes nationwide opportunities. Exclusive distributorships, dealerships, agency operations. Write today. National Franchise Reports, MI-528, 333 North Michigan, Chicago 1.

PATRICK PAID for his home sharpening saws with Foley Saw Filer. Mix made $900 year sparetime. Crego files 1,000 saws yearly. Make $3 to $5 hour at home. Free book tells how. Donald G. Foley Co., Columbia Heights, Minn.

CLEANS WINDOWS without mess. Strange "dry" cleaning-cloth. Replaces liquids. Windows gleam. Samples sent on trial. Kristee 116, Akron, Ohio.

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YOUR OWN $10,000 a year business! No investment. Sell new Air Cushion Shoes spare time. Immediate commission, bonus. Samples supplied. Charles Chester Shoes, 274 Brockton, Mass.

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MARKETS EVERYWHERE. Make Artistic concrete birdbaths, pottery. Chemical coloring. Home workshop. Hundred varieties. Hollywood Cementcraft, 8527-L Wonderland, Hollywood 46, Calif.

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OPPORTUNITY TO earn $15,000-$30,000 annually. Franchise protected. Granted on $12,500 basis. Live at home. No merchandise to buy. Selfemployed. One of most exclusive and noncompetitive businesses in United States and Canada. Send for free explanatory booklet. Harrell & Company, Box B-F, Louisville, Ill.

BOOK "505 ODD, Successful Businesses" free. Work home! Pacific-23C, Oceanside, Calif.

COLORGLAZED CONCRETE pottery made without molds. Patented method. Cemetery products, novelties, tiles. Basement leaksealing. Moneymaking projects. Booklets, details free. Men only. National Pottery, Grand Rapids, Minnesota.

$40.00 WEEKLY, SPARETIME — easy! Home Venetian Blind Laundry. Free Book. Burtt, 2434GV Wichita 13, Kans.

BAKE NEW Greaseless Doughnuts in kitchen. Sell stores. Free recipes. Irving Ray, 3605 South 15th, Minneapolis 7, Minn.

MAKE FLEXIBLE molds. Cast plaques, figurines. Free sample. Tooker, 1045-E Fairview, Hamilton, Ohio.

OPERATE PROFITABLE mailorder business! Write: Thomas Bond, 1637K West Vernon, Phoenix, Ariz.

WE PAY $3.50 lb. dried. Grow Mushrooms. Cellar, shed and outdoors. Spare, full time, year round. We have 25,000 customers. Free Book. Washington Mushroom Ind., Dept. 183, 2954 Admiral Way, Seattle, Wash.

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RUBACREAM! CONCENTRATED latex cream! Makes molds quicker! Thicker! Instructive literature free! Castcraft Studios, 508-MI Marion St., Brooklyn 33, N. Y.

YOUR NAME Sent to 1000 mailers, wholesalers, etc. Listed for our mailings each month for year 25¢. Dixie Mailers, King, N. C.

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COSTS 8¢—RETAILS $1.00. Automotive product. You manufacture, distribute. Wilson, Box 505-S, Princeton, W. Va.

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PIANO TUNING learned at home quickly. Tremendous field! Musical knowledge unnecessary. Be independent! Information free. Empire School of Piano Tuning, Champaign, Ill. (Founded 1935.)

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I'LL SEND you free stocking sample newest advancement in hosiery since discovery of nylon. Patented Full-length; stays up without supporters amazingly comfortable. Nationally advertised price $1.95. Make money fast introducing to friends at $1.00 pair. American Mills, Dept. 643, Indianapolis, Ind.

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FREE TO Women Only! Be A Beauty Advisor. No experience needed. Make 60% profit on famous nationally advertised Hollywood Cosmetics. Demonstrate to friends and neighbors and earn up to $5.00 an hour spare time—$25.00 a day full time. Later you can double your earnings by letting others demonstrate for you. Free! No charge, now or ever, for actual useable samples of Studio Girl Cosmetics. Send name on postcard to me, Harry Taylor, President, Studio Girl Cosmetics, Dept. 5082M, Glendale, Calif.

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FOREIGN JOBS—Latin America, Alaska, Canada, up to $1500 monthly. Up-to-date 1958 Foreign Service Directory gives complete information; hot list of firms hiring for Military and Civilian Construction, Aircraft, Oil, Exporters-Importers, Mining. How-When-Where to apply. 11th successful year. $1.00. Global Reports, Box 8873-MI, Los Angeles 8, Calif.

COME TO Florida's Suncoast. Employment Ads Mailed. $1.00. Mo. $5.00. Jimmy Ray, Palmetto, Fla.

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MAKE EXTRA Money. Cash commissions. Everybody buys easy-to-sell Advertising Book Matches. Union label. Big variety—Glamour Girls, Scenics, Hillbillies. Powerhouse selling kit Free. Steady repeat business. No experience necessary. Superior Match Co., Dept. FX-258, 7528 S. Greenwood, Chicago 19.

START BIG-PAY Business At Home in spare time. No experience needed to operate little table-top machine for bronzing baby shoes. Make $5.46 profit on every pair. Full particulars Free. Send postcard to Mason, 1512 Jarvis, Room CM4A, Chicago 26, Ill.

HOTTEST MAIL Order Plan Ever! Sell photos, films, art novelties. Huge proven profits; Free Details! Profits Unlimited, Dept. 3E, 15015 Ventura Blvd., Sherman Oaks, California.

DETECTIVES—EXCELLENT Opportunities. Experience unnecessary. Detective Particulars free. Write, George Wagoner, 125-J West 86th, New York 24.

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VENDING MACHINES—No selling. Operate a route of coin machines and earn amazing profits. 32-page catalog Free! Parkway Machine Corporation, Dept. 15, 715 Ensor St., Baltimore 2, Md.

KILL PESTS For Profit! $1200.00 Monthly Proved! Kid homes, farms, business of termites, rodents, pests. New shortcut methods! Learn everything two weeks! Free success plan. APCOA, Dept. 3E, 15015 Ventura Blvd., Sherman Oaks, California.

MAKE BIG Easy Profits making costume jewelry at home in spare time! Quick easy to make; easier to sell! Details Free! Don-Bar, 3511 W. Armitage, Dept. B-212, Chicago 47, Ill.

EARN $240.00 A Month at home, spare time doing only Two $5.00 Invisible Mending jobs a day. Big money paid for service that makes cuts, tears disappear from fabrics. Steady demand. Details free. Fabricon, 6256 Broadway, Chicago 40, Ill.

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MAKE MONEY Writing Short Paragraphs! No tedious study. I tell you what to write, where and how to sell; and supply list of editors buying from beginners. Many small checks add up quickly. Write to sell, right away. Send for free facts. Benson Barrett, Dept. C-78-N, 7464 Clark, Chicago 26.

BANDSAW, JIGSAW owners. Extra cash easy. Instructions $1.25. Finished article free. Wich-Craft, 1211 Denver, Wichita 4, Kans.

"HOME BUSINESS Digest" has Moneymaking opportunities galore. Sample 25¢. Donovan, 79-M Greenbelt, Levittown, N. Y.

"MAIL ORDER Laws and Regulations" $1.00. Explains necessary licenses, taxes, legal requirements, etc. "Mail Order Rules for Beginners" $1.00 additional. Mailguide, 307 E. Fourth St., Cincinnati 2, Ohio.

MAKE $200.00 MONTHLY Spare Time With Jigsaw. Free Details. Eikmon, 346 North Summit, Sioux Falls, S. D.

$30 WEEKLY POSSIBLE preparing envelopes. Instructions $1. Refundable. Ace, Box 624-D, Pacific Palisades, Calif.

RECEIVE SAMPLES, money earning opportunities. Instructive literature. Buy wholesale. $1.00. Druals, 4821-6 Homerlee, East Chicago, Ind.

$30-$60 WEEKLY SPARETIME, addressing envelopes. Instructions $1, refundable. Reiss, 210-D Fifth Ave., New York 10.

ATTENTION! MEN, Women! Earn extra cash, address advertising postcards. Langdons, Box 41107-M, Los Angeles 41, Calif.

$40.00 WEEKLY, SPARETIME — easy! Home Venetian Blind Laundry. Free Book. Burtt, 2434FE Wichita 13, Kans.

CHARACTER ANALYSIS—self taught. Free brochure. Stanovich, 5441 Farna, Arcadia, Calif.

MEN AND Women Wanted to start home business in spare time with little tabletop rubber stamp machine. Easy to earn up to $9.80 an hour without previous experience. Full particulars Free by mail. Send postcard to Roberts, 1512 Jarvis, Room CR4A, Chicago 26, Ill.

SELL TITANIA Gems; far more brilliant than diamonds. Catalog 10¢. Diamonlite, 2420-X 77th, Oakland 5, Calif.

WE PAY $3.50 lb. dried. Grow Mushrooms. Cellar, shed and outdoors. Spare, full time, year round. We have 25,000 customers. Free Book. Washington Mushroom Ind., Dept. 184, 2954 Admiral Way, Seattle, Wash.

FREE PACKET "Secret Journal." 919 Money Plans! Work home! Magical! Publico-NN2, Oceanside, Calif.

BUSINESS OF your own. Earning potential as high as $40,000 annually. Issued on $12,500 base. No merchandise to buy. Send for free explanatory booklet. Harrell & Company, Box 8-FF, Louisville, Ill.

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$15,000. PROFIT IN One Year Possible, on $5.00 cash and just 3 hours attention weekly! Experience unnecessary! Fabulous but true! Proof, complete detailed Plan, only $1.00—satisfaction or refund! Columbia Enterprises, 8203-M, Grubb Road, Silver Spring, Md.

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$1,000. MONTHLY POSSIBLE, raising Earthworms—African Giants! Backyard, Garage, Basement. Complete Illustrated Booklet, explains raising, feeding, packing, marketing. Only 25¢! Ozark Worm Farm-4, Willow Springs, Mo.

MAKE MONEY clipping newspaper items for publishers! Newscraft, MI-983-E. Main, Columbus 5, Ohio.

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FREE FOLIO! Work from home. Spare-time! Send stamp. Jackson, Box 37215-5, Los Angeles 37, Calif.

FREE "$5,000-$45,000; UNLIMITED Vacations." No merchandise! Work home! Haylings-M7, Carlsbad, Calif.

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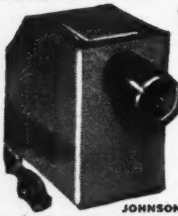

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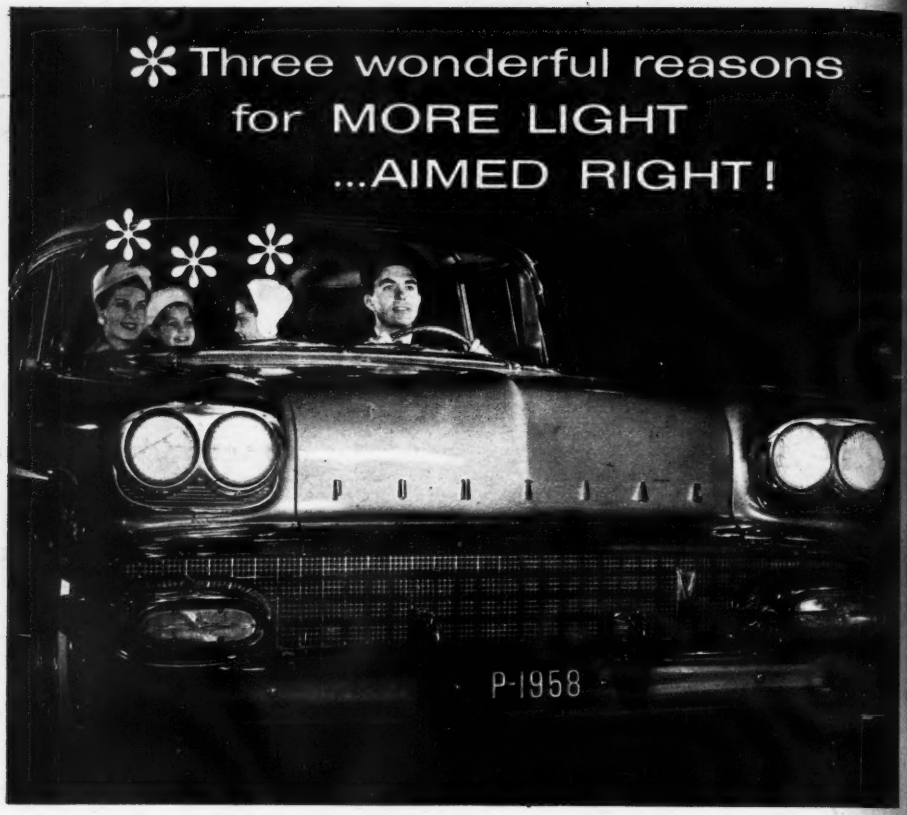

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Your family deserves all the safety you can provide . . . deserves the extra safety of new Guide T-3 Headlamps.

With Guide you see farther down the road because this new, industry-approved sealed-beam headlamp, introduced just two years ago, has stepped-up power plus a new light pattern which throws more light on the right—where you need it most.

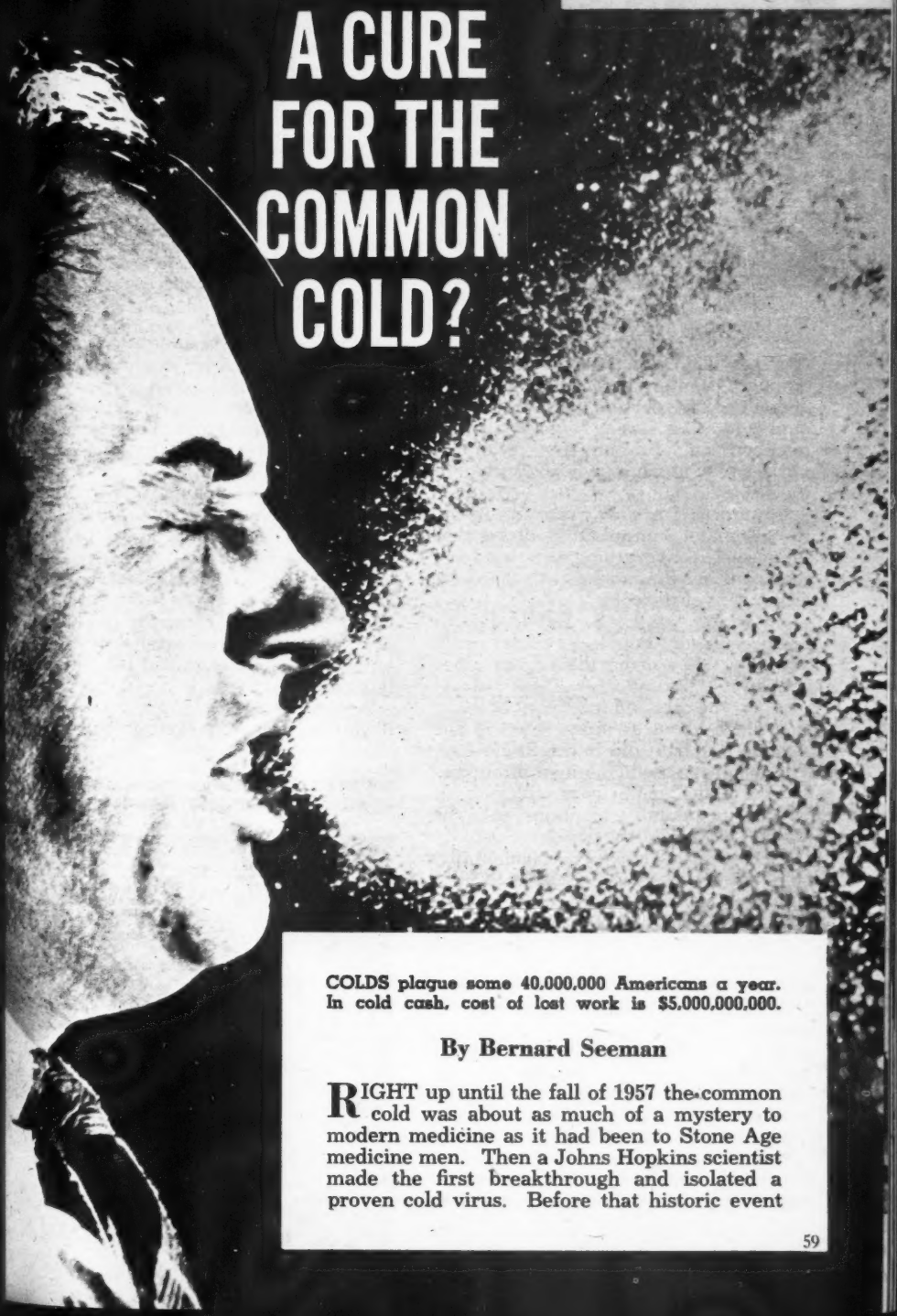
But, most important of all, these new Guide T-3 Headlamps can be perfectly aimed in minutes—in broad daylight!

Three "Guide Points" on the face of each T-3 lens are ground to tolerances within one ten thousandth of an inch. This precision, and the simplicity of the T-3 aiming method, assure you of MORE LIGHT—AIMED RIGHT . . . more safety for both you and your family.

If the headlamps in your car are two years old or more, have them replaced with new Guide T-3s now. And have your headlights aimed at least twice a year.

AC THE ELECTRONICS DIVISION OF GENERAL MOTORS

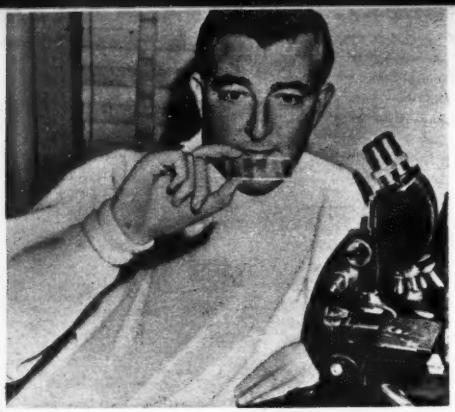
A CURE FOR THE COMMON COLD?



COLDS plague some 40,000,000 Americans a year. In cold cash, cost of lost work is $5,000,000,000.

By Bernard Seeman

RIGHT up until the fall of 1957 the common cold was about as much of a mystery to modern medicine as it had been to Stone Age medicine men. Then a Johns Hopkins scientist made the first breakthrough and isolated a proven cold virus. Before that historic event



A cure for all common colds has not yet been found but medical men have high hopes.

JH VIRUS, causing 30 per cent of common colds, was isolated by Dr. Winston Price. Vaccine has proved 80 per cent effective.

there had been lots of opinions, of course. Said Dr. William J. Kerr in the Annals Of Internal Medicine in 1950: "I don't believe personally that the common cold . . . is spread by ordinary human contacts. I do not think filterable viruses play much part in the spread of the disease."

Countered Dr. C. N. Andrews in the New England Journal Of Medicine that same year: "Everything that we have seen confirms that a virus was the causative agent of the cold."

To which the U. S. Public Health Service added: "People get colds in only one way: they catch them from other people."

As for the care and treatment of colds, that made about as much sense in the Atomic Age as it did in the Stone Age. The primitive medicine men often prescribed a tea made from willow bark which, incidentally, contains salicylic acid. The up-to-date physician usually prescribes aspirin which, incidentally, contains salicylic acid. Neither form of salicyclic acid has been known to cure a cold.

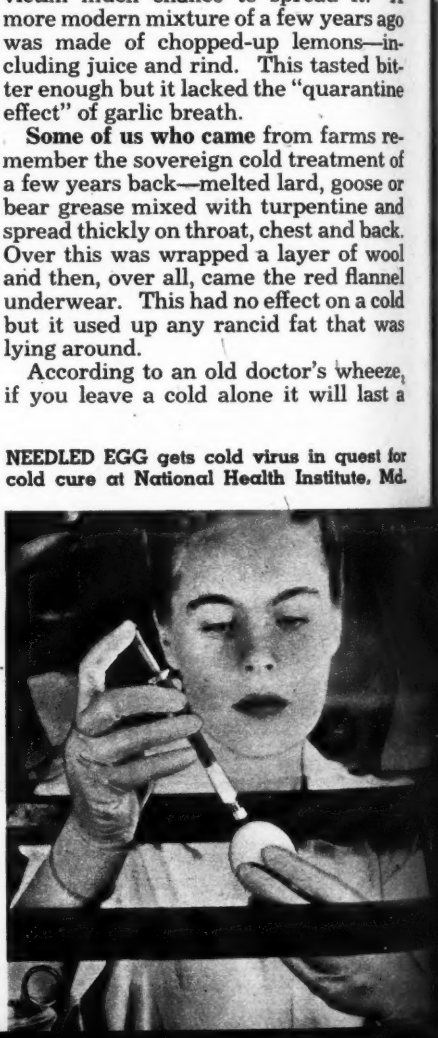
Babylonian and Assyrian physicians of about 2000 B.C. tried to cure the cold by taking a combination of specially-treated fluids and pouring them *over* the patient. Twentieth Century physicians recommended that various fluids—especially fruit juices—be poured *into* the patient. Whether the patient is dunked or flooded, the results seem to be the same: he is stuck with his cold.

A British physician of 1676 cooked up a syrup of mashed garlic and brown sugar which he fed to cold victims. This didn't cure the cold but it didn't give the victim much chance to spread it. A more modern mixture of a few years ago was made of chopped-up lemons—including juice and rind. This tasted bitter enough but it lacked the "quarantine effect" of garlic breath.

Some of us who came from farms remember the sovereign cold treatment of a few years back—melted lard, goose or bear grease mixed with turpentine and spread thickly on throat, chest and back. Over this was wrapped a layer of wool and then, over all, came the red flannel underwear. This had no effect on a cold but it used up any rancid fat that was lying around.

According to an old doctor's wheeze, if you leave a cold alone it will last a

NEEDLED EGG gets cold virus in quest for cold cure at National Health Institute, Md.



week but under your doctor's care it will last only seven days.

Then there was the story of the doctor who told his sniffling patient to put on wet pajamas and run up and down in the snow.

"Won't that give me pneumonia?" asked the patient.

"Exactly," said the doctor. "Pneumonia we can cure."

More recent treatments which include antihistamines, nose drops, inhalers and such preparations as citrus fruit extracts have, in some cases, eased the stuffiness, sniffles, coughs and other miseries of the cold. But they certainly produce no *cures*.

Regardless of method or brand of treatment, the cold remains as common as it is contagious. Altogether, the average American has three colds a year. Each and every day, some 40,000,000 of us are afflicted with sniffles. In cold cash, the cost in lost days amounts to about $5,000,000,000 annually, a sum not to be sneezed at.

It is in this area of dollars and cents that Dr. Winston H. Price's 1957 discovery at Johns Hopkins University can have its most important immediate effect. When the doctor—a biochemist who never went to medical school—isolated the JH virus (JH stands for Johns Hopkins) and developed a vaccine against it, he made the first notable advance in over 3,000 years of cold history.

A stocky, modest man of 34, Dr. Price is quick to admit that he stumbled onto his discovery by accident. As associate professor of epidemiology at the Johns Hopkins School of Hygiene and Public Health, he was heading a research team investigating influenza when the JH virus turned up during an outbreak of colds.

According to Dr. Price, he didn't get excited over the discovery until a year later when the evidence began to pile up that this was a virus that could really cause colds. Once he was sure he had the virus, developing the vaccine was relatively easy.

Cultures of the virus were grown in tissue from monkey kidneys. Then the virus was harvested and inactivated by the addition of a chemical called "formalin."

The big problem here was to "kill" the virus enough so it wouldn't cause a cold, yet not kill it so "dead" that it couldn't stimulate the production of cold-fighting antibodies in the bloodstream.

While all this was going on, Dr. Price clamped a big security blackout on his project in order not to raise false hopes after all the years of cold confusion.

"I didn't tell anyone what I was doing," emphasized Dr. Price, "not even my wife." [*Continued on page* 162]

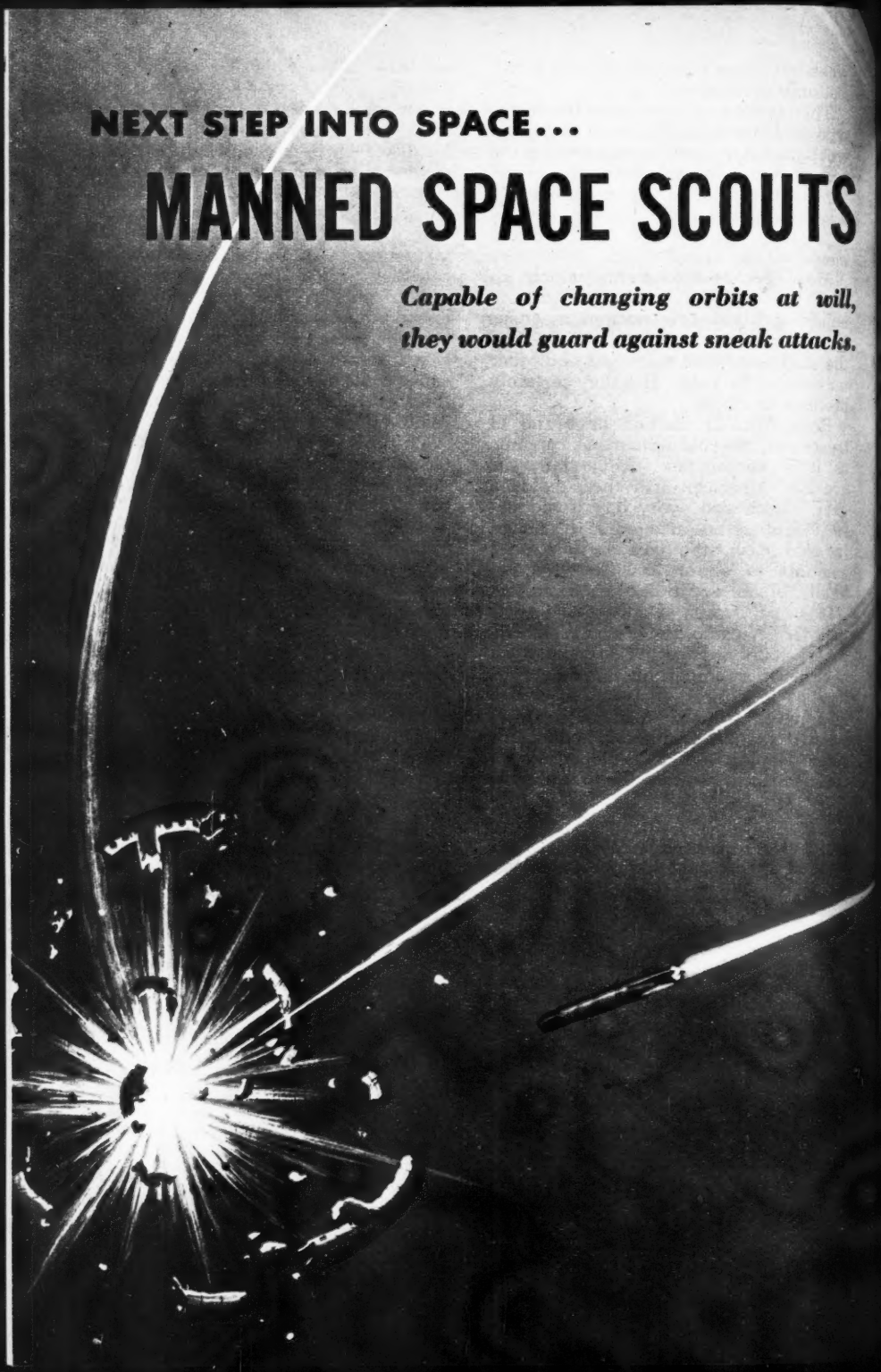
COLD WAR research is waged at Illinois U. with aid of co-eds shown in cold chamber.

SNIFFLERS try new nose drops at Common Cold Research Unit set up in England.

NEXT STEP INTO SPACE...

MANNED SPACE SCOUTS

Capable of changing orbits at will, they would guard against sneak attacks.



ARMED with deadly and accurate atomic missiles, this versatile manned space scout could seek out and destroy enemy satellites.

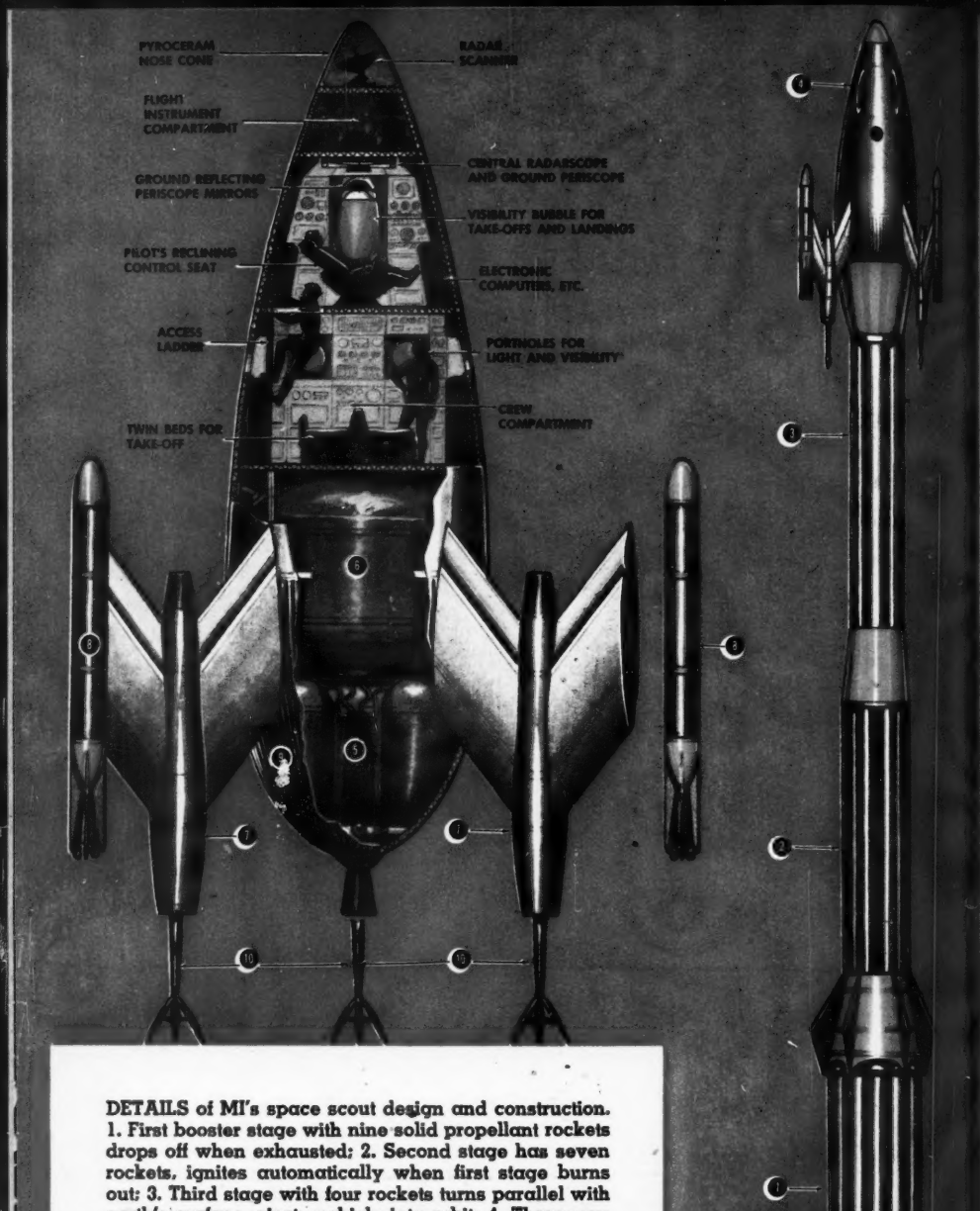
By G. Harry Stine

MANY reasons have been given to justify building a manned satellite and placing it in an orbit around the Earth. One of the most persistent of these reasons is the ability of the satellite to act as a scout, flying high over potential enemy territory

By Frank Tinsley

THE orbital scout satellite, outlined by Mr. Stine in the adjoining column, must be a versatile vehicle. Launched by a train of booster rockets, it will take off like the final "step" of a high altitude missile, curving into its initial orbit at the top of its arc. Once outside the atmosphere, it will

FRANK TINSLEY '57



DETAILS of MI's space scout design and construction. 1. First booster stage with nine solid propellant rockets drops off when exhausted; 2. Second stage has seven rockets, ignites automatically when first stage burns out; 3. Third stage with four rockets turns parallel with earth's surface, ejects vehicle into orbit; 4. Three-man space scout vehicle; 5. Liquid fuel rocket engine; 6. Main fuel tank serves both rocket and jet engines; 7. Three supersonic jet engines are used to return to Earth; 8. Three atomic missiles capable of being launched from wingtips; 9. Corrugated, large area tail cone cooled by liquid oxygen to permit high speed re-entry into atmosphere; 10. Shock-absorbing feet of landing legs open for better weight distribution.

with powerful TV cameras and telescopes capable of detecting new military installations, troop movements, sailing of warships, etc.

While it is possible for satellite-based equipment of quite modest size to spot a ship or train from an altitude of 1,000 miles or so, there is a better way to do the job!

In a recent magazine article, Commander L. J. Stecher, Jr., of the U. S. Navy points out that a manned space station in permanent orbit around the Earth is at a grave disadvantage because its future positions can be determined with high accuracy. Utilizing satellite tracking cameras, such as were used to spot the Sputnik satellite, any potential enemy can find a space station in the sky and, after making enough sightings, very accurately determine the orbit.

Any potential enemy can therefore go merrily about his business when the station isn't around to snoop, then head for cover when he knows the station will be in the sky overhead.

What, therefore, constitutes the better way of performing this scouting task from space?

The answer is simple: temporary space stations. These can be nothing more than three-man space ships, cousins of those which would be required to carry cargo up to a permanent station. They would be orbital scouts, capable of being launched from a number of places, including the decks of ocean-going warships, at times which could not be predetermined by the enemy. Furthermore, they would be capable of entering many types of orbits —equatorial, polar, or inclined—and there would be no way of knowing just which orbit they would be in at a specific time.

Orbital scout ships would be capable of circling the Earth several times. While in orbit, they could actually change orbits. Using their rocket motors, they could break orbit and return to the surface of the Earth with their films and reports.

This method would be quicker, cheaper, more efficient, and more effective than unmanned satellites. Such ships would be hard to spot. Furthermore, unlike [*Continued on page* 185] cruise like a spaceship, changing orbits at will so as to observe earth installations at unexpected intervals, or seek out and destroy potential enemies. Earthbound, the scout must be designed to re-enter the atmosphere without burning up. Finally, to return successfully to its base from any orbit or angle of terrestial approach, the machine must be capable of ordinary plane-like flight through the atmosphere.

To fulfill these varied functions, MI's "satellite killer" is designed to fly either nose or tail first, driven by a rocket engine in space and by a triad of jets for more economical propulsion in the atmosphere. The latter are mounted on three MW type ultrasonic wings, fitted with conventional airplane control surfaces. An elongated nose cone, rooted in the forward wing spar, projects from the air intake of each engine and serves as a landing leg. Each is equipped with an internal shock absorber and expanding petal shoes at the tips. Together they form a highly stable tripod rest. The basic design of the ship with its heavy fuel load carried in a fat, tear-drop belly, makes it virtually non-capsizable.

The principal propulsive unit is a liquid-fuel rocket engine, mounted in steering gimbals and set in the bulbous tail of the body. This is used at the final step of take-off and during space flight when a change of orbit is desired. It is also used in short bursts to brake the ship's descent when re-entering the atmosphere and in the normal tail-first landings at the base. This engine has the great advantage of being controlled by means of a throttle and it can be started, run fast or slow and shut off at will.

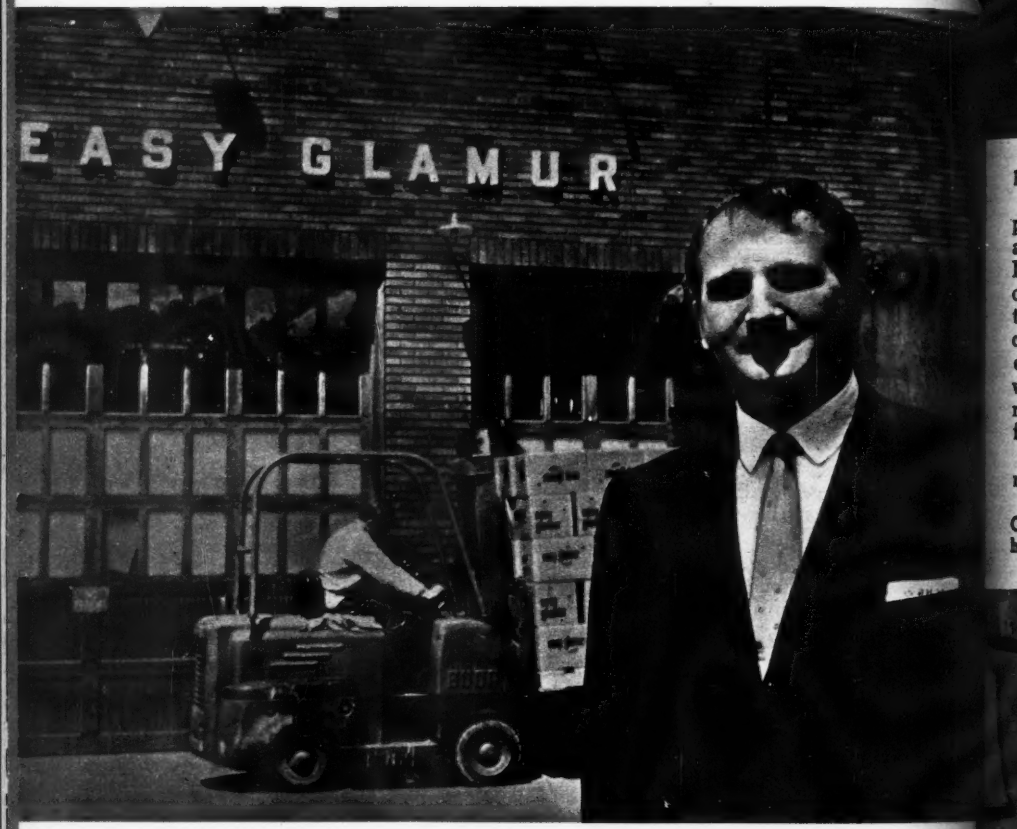
To resist the enormous temperatures, the latest missile materials and design features have been incorporated in the space scout. These include the new PH-15/7-Mo heat resistant stainless steel, titanium and Pyroceram nose and tail cones, capable of retaining rigidity of form at 2,200° F. In accordance with up-to-the-minute missile design, the tail cone is large and bulbous so as to provide maximum heat diffusion area. This is almost doubled by corrugating the material and is further cooled by circulating liquid oxygen before it enters the engine to combine with the fuel. The rest of the scout's shell is constructed of stainless steel in honeycomb sandwich form. This combination of materials amply fulfills strength requirements and overcomes the skin friction heat problem.

The two-deck crew area, situated above the fuel and oxydizer tanks, consists of a control level fitted [*Continued on page* 178]

MONEY MAKING IDEA

HOW TO CLEAN UP IN BUSINESS

By Harvey B. Janes



EASY GLAMUR inventor Jack Hosid in front of his new factory building in Syracuse, N. Y.

ONE day in the summer of 1949, Jack Hosid of Syracuse, N. Y. came home from work to find his wife upset because the rugs and upholstered furniture she had sent out to be cleaned had been returned still stained and grease-soiled and with the original colors seemingly washed out. Two cleaning establishments had tried to rectify the situation without success.

Calming his wife, Hosid set to work to make a concentrated solution that would mix with relatively hard Syracuse water to form a cleaner that would

EYE-CATCHING promotional displays helped put Easy Glamur sales over $1,000,000 in 1956.

penetrate all types of dirt and grease and yet be gentle at the same time. Previous experience in the production of home water softening units led him to believe a solution of concentrated chemicals would actually make a super-effective cleaner out of ordinary tap water. He worked most of the night mixing some 22 different chemicals before he was ready for a trial run.

He got a pail from the kitchen and mixed his concentrate—eight parts water to one part of blue liquid, then he got a large scrubbing brush and went to work.

His concoction made a good lather that disappeared as he scrubbed so he decided not to rinse it with water. The rugs and upholstery looked cleaner but he couldn't really tell until they dried. Dead tired he fell into bed.

When he got up the next morning to look at the results of his work, he and his wife [*Continued on page* 176]

CLEANER is safe to use on any fabric unharmed by water, non-toxic, non-inflamable.

LATHER worked up by Easy Glamur gets out dirt and grease, restores original colors.

HUNTING TREASURE

COVER STORY

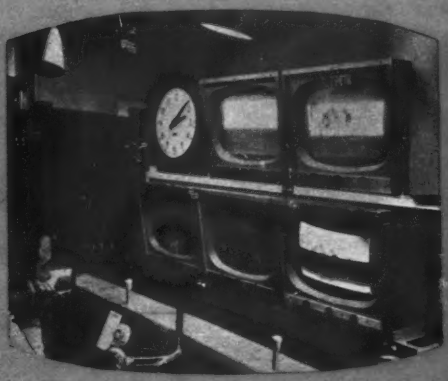
MASTODON BONES are hunted in cave at bottom of Florida's Silver Springs on the NBC-TV

By Robert G. Beason

FOR uncounted generations men have probed in the sea to recover some of the fabulous hoard lost to wind and storm. The problem is not a matter of finding wrecks. The world's waterways contain the remains of more than 1,000,000 ships sunk in the last 450 years and most of their locations are charted. The loot they carried is valued at $300,000,000,000. A fifth of all the gold

WITH UNDERWATER TV

SPANISH GALLEON wrecked off Florida in 1733 is sought on CBS-TV's Odyssey.



MONITORS on barge receive images from cameras: ship carried $68,000,000.

roaming show, Wide Wide World.

and silver ever mined has been lost in sea disasters and only a small part recovered.

The difficulties arise in making a minute examination of wreckage 100 to 500 or more feet underwater. Because of immense pressure, divers are able to stay down only a few minutes. An Aqualunger, for example, can work at 150 feet less than 17 minutes. So any survey down in Davey Jones' locker is a hurried affair.

Underwater television is the new answer to the treasure hunter's dream. Suspended at the end of a cable and needing no oxygen, a marine TV camera

U. S. NAVY undersea TV unit built by Vare is remote-controlled, can hover in water.

can operate indefinitely as far down as 3,000 feet. It sends up a continuous picture of everything around it, a picture that can be viewed on monitor screens in the "mother ship" by dozens of people.

After inch-by-inch television examination of a wreck in deep water, the recovery can be made with grapples, controlled by men watching the operation on the TV monitor topside.

If the hulk lies in shallower water, divers can pick up the loot and drop it into baskets. Before they ever put a foot in the water they are shown on the TV monitor exactly what to pick up and where it is located. Once down, the divers get further instructions from shipboard via an underwater loudspeaker mounted on the camera.

Despite its undoubted advantages in salvage and treasure-hunting, UTV has had limited use up to now. The reasons are many. Underwater television is new and not well known. The units are not easily obtained and they are expensive.

Probably the most incredible treasure

MIDGET SUB with television eye examines sunken hulk in this view by Frank Tinsley.

yet brought up by an expedition using UTV was the cargo of a Greek ship sunk in 230 B.C. beside a huge rock just outside the harbor at Marseille, France. From the wreckage of this old sailing craft the famous French diver Jacques Cousteau and his crew rescued hundreds of amphorae (wine jugs), glossy black Campanian dinnerware from Italy, lead pipes, iron fittings and tools, copper and bronze nails and a bronze figurehead—museum pieces of inestimable value. It was the oldest marine wreck ever discovered.

This remote TV eye in the deep has been around ten years but only recently has it gained appreciation. It was in 1947 that our scientists first packed a TV camera into a watertight box and trundled the affair around tne isle of Bikini to examine damage in the first peacetime atomic bomb tests. The gadget failed but an idea was born.

Four years later UTV made a dramatic public debut by finding and photographing the British submarine Affray, lost in the English Channel with 75 men aboard. In this search a marine TV camera examined 20 old wrecks on the Channel's bottom before bumping into the Affray in 285 feet of water. It even sent up images of the lost sub's conning tower nameplate. Because of shifting currents the Affray was not recovered.

In 1954 British salvage experts located and salvaged most of the wreckage of a Comet jetliner which fell into the Mediterranean near Elba, carrying 35 persons to death. The search, which an admiral compared to "looking for a handful of peas in a field from a helicopter through a mist," was the final proof of UTV's real worth and established the cause of the crash. The American salvage firm of Merritt-Chapman & Scott, using a UTV unit as a bird dog, recovered nine-tenths of a jet fighter that went into the Pacific at 777 mph and scattered over 70,000 square feet. This is an indication of the search-and-recovery powers of our new electronic marvel.

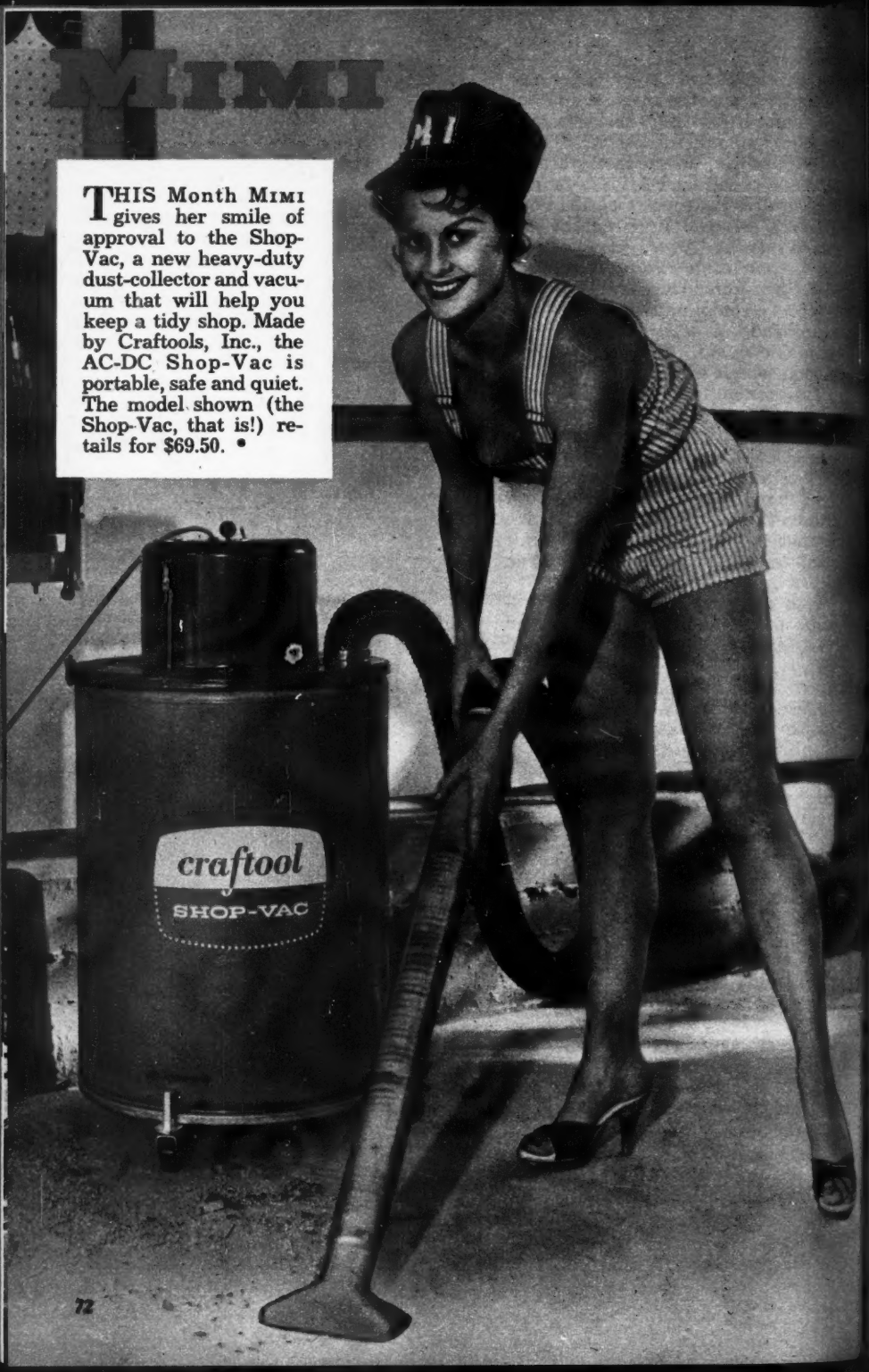
Cameras using the image orthicon

CAMERA housed in a bell is towed with fishing gear to check on its performance.

DIVER recovers part of Caribbean treasure ship in salvage operation directed by UTV.

pickup tube actually are more sensitive than the human eye and can see underwater objects not visible to a diver. But tiny particles of mud suspended in the water normally limit the TV range to 12 to 20 feet [*Continued on page* 180]

MIMI



THIS Month MIMI gives her smile of approval to the Shop-Vac, a new heavy-duty dust-collector and vacuum that will help you keep a tidy shop. Made by Craftools, Inc., the AC-DC Shop-Vac is portable, safe and quiet. The model shown (the Shop-Vac, that is!) retails for $69.50. •

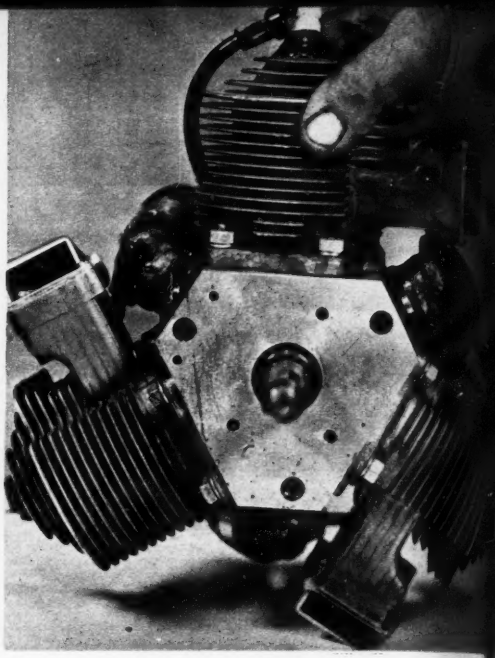
It's New!

MOBILE SATELLITE LAUNCHER made by Ideal Toy Corp. of New York sends spinning saucer-satellites 75 feet into outer space. Satellite's path can be adjusted. Price is $4.98.

GERMAN COUPE at Frankfurt car show, Auto Union 1000, is a two-seater with a three-cylinder, two-stroke mill. Top is 80 mph. Costs $3,000.

CONTINUED...

PLATTER SPINNER, portable, plays when you put a record in the slot. German machine plays 3,000 records on one battery.



RADIAL ENGINE—14 lbs., three-cyls., 15 cu. in. displacement, 13 hp. Inventor W. C. Johnson designed it for aircraft, boats.

NEW WORKHORSE 'copter by Omega Aircraft boasts great stability with sling loads under fuselage, wide-open access to all maintenance and service points.

KIDS' DOOR in Wichita Savings and Loan building encourages junior savers. The day it was put in service several adults complained that it was too low.

STAINLESS KENNEL was built by U. S. Steel when this dog's mistress wrote to ask where one could be had. Sorry—no more.

PLASTIC POOCH, His Master's Voice gimmick for RCA Building, Albany, N. Y., was built by Addison Plastics, Addison, Ill.

CONTINENTAL KIT FOR EDSEL, by Bonzer Mfg. Co., L. A., gives this new Ford rig a stainless tire ring, a carrier with 180-degree tiltback, bumper tips, face plate with spinner.

MCCAHILL TESTS

The NEW MERCURY.....

Satellite styling and fine roadability earn applause from Old Chrome Dome.

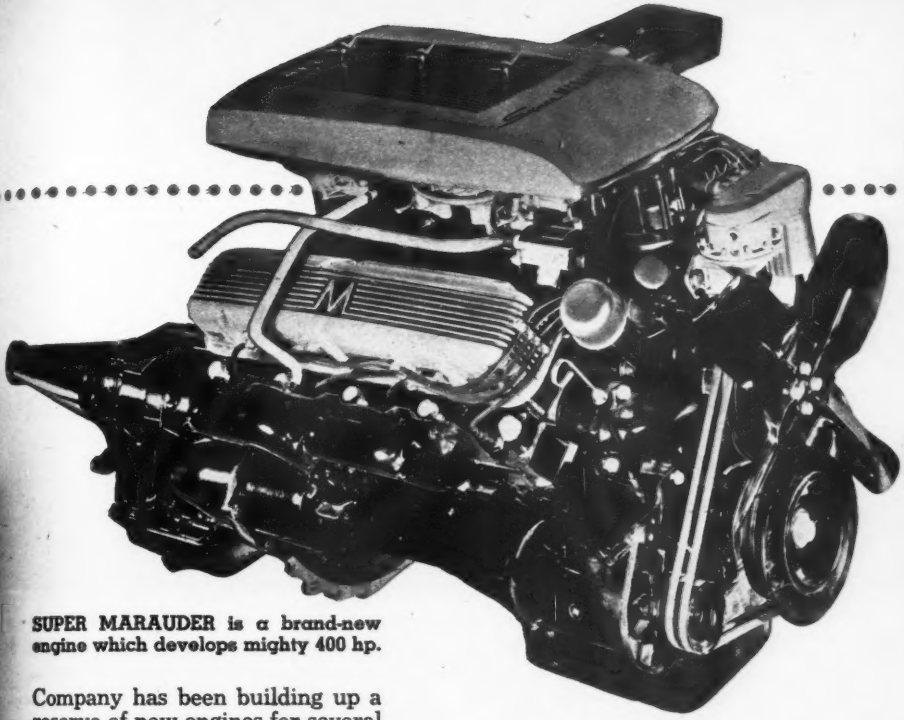
By Tom McCahill

"MERCURY has again dipped in Ford's money pit, come up with almost completely new car."

THE Russians may claim to have invented the gin mill, the alcohol rub and the two-headed oboe—but Mercury invented and launched the first satellite with its '57 offerings.

For 1958, Mercury has again dipped deep into the Ford money pit and come up with an almost completely new car, except for a general continuance of the Outer Space styling which put its banner on the moon in '57. Vic Raviolo and Bill Stroppe, keepers in Mercury's Piston Zoo, whipped up a brand-new engine for '58 which is almost identical to the engine that will be found in the '58 Lincolns. However, the Mercury mill comes in two flavors: 383 cubic inches and a 430-cu.-in. giant that is standard in the Park Lane series and optional in the Montclair and Turnpike Cruiser.

There is also another little dandy currently referred to as a "Super Marauder." Bill Stroppe originally worked up this one for the use of ambitious cops chasing ambitious speeders. But a nice touch offered by Mercury this year is that this same daisy-flattener is offered to the taxpayer—the first break this guy's gotten in years. The Ford Motor



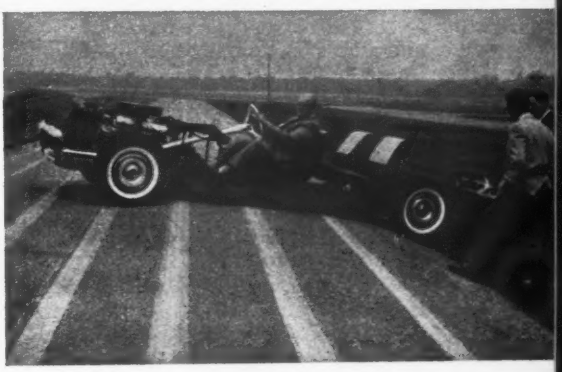
SUPER MARAUDER is a brand-new engine which develops mighty 400 hp.

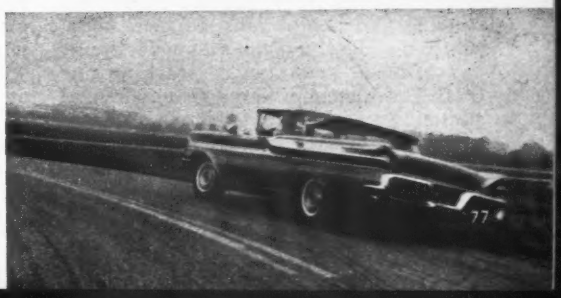
Company has been building up a reserve of new engines for several years. This newest Mercury-Lincoln offering (with a claimed 400-hp rating) is the greatest in Ford's history.

(Just as I finished testing the Mercury, the announcement was made that Lincoln had remarried its cast-off spouse, Mercury. This is perhaps an economy move on the part of Lincoln and Mercury; operating as separate teams, with separate organizations all the way through from advertising to engineering, created a lot of unnecessary duplication. This should not have any effect on the products other than possible improvement.)

Mercury is still very interested in performance, meaning speed over the ground, but in addition they've spent a lot more time than many companies in building real comfort into their offerings. For example, Mercury's noise insula-

BIG M's chassis is where most of the major changes were made this year, Tom reports.





ROADABILITY, always good, is improved; air suspension is offered.

tion program has been pushed further than the casual observer might suspect. Items such as sealing off engine racket and quashing road noises have been major projects undertaken by a whole corps of engineers. As a result, cellulose products, spun glass and asphalt have been utilized to the fullest. Hundreds of tests were made over rugged roads to eliminate all inside cabin clatter. In addition to my regular tests I tried out the soundproof Mercury over Belgian block roads, railroad ties and heavily-rutted concrete strips. All these tests were made with the windows rolled up and inside the cabin it was so quiet you could almost hear your whiskers growing. The only car on the road quieter than a Mercury is a parked car.

The '58 Mercury also has a new Climate Dial, similar to a one-knob-control TV set. A twist automatically adjusts vent openings; pushing and pulling the same knob regulates the two-speed defrosting and heater fans. In fact, with this one widget you can dial everything but "Dixie"—and they're working on that. The air-conditioning controls are similar. Though I didn't test one of these units, George Mueller, Mercury's Chief Engineer, assured me the air conditioner on the new Mercury will provide enough cold air inside the car to freeze an Eskimo's eyeballs while crossing Death Valley. In 1957 some pecple who shelled out roughly $500 for air conditioning were sadly disappointed when various manufacturers reduced the capacity of the units while increasing the glass area —resulting in $500 up the flue.

The Mercury, whether you like or don't like the styling, has a lot of functional properties that are superior. The roofline has been carefully designed to give maximum visibility without frying you like a potato in midsummer. The seats are well-pitched, which adds up to real passenger plushness. Though the rear body panel resembles a plane that has flown between close trees and got de-winged, nobody but nobody (as they say at Gimbels) is apt to mistake what kind of car you're driving. In the station wagon series, the whole rear window is retractable and it can be moved automatically on cars equipped with electric windows.

My test of the '58 Mercury took place at Dearborn, on the Ford Proving Grounds. On the road-handling course, which is a serpentine monster simulating an old-fashioned concept of a road

PARK LANE is new luxury barge of Mercury line. It is seven inches longer than the other models and boasts 125-in. wheelbase.

FENDER PIGEON rides over the hooded twin headlights which are now standard equipment on all models of new Mercury.

race course, I found the Mercury retaining all its old roadability. This is a feature which has been a Mercury boast since way back in 1939 and, through racing experience in the last few years, it has been improved. I tested many models of Mercurys, including the ones with air suspension, on a turtleback road. This taxed the levelizing features right up to the armpits. As space-missilley as this item seems, the turtleback crown was so rugged that Mercury's little air bladder arms couldn't level the car off. But on normal roads there is plenty of compensating movement available.

Ford has a brand-new track in Romeo, Mich., but the Dearborn wonder I was using has developed some waves in the North Turn that can make you think you're riding an out-of-tune horse at full "Giddyap!" These Mercurys are too fast to let out to the last notch at Dearborn. Once or twice, after a sporty take-off from a galloping curve, I whipped up close to 110 mph before having to back down to avoid joining my ancestors, of whom I am not fond. As for acceleration, 0-60 mph averaged 9.6 seconds and 0-30 mph took four seconds on the nose. This is not world-shattering, especially when you consider that the car I tested was the 430-cu.-in. Park Lane series.

Actually, when you look deeper into the script, the answer is simple. My test car had a 2.69 axle which is standard in the Park Lane series (with an optional 2.91 available). In Park Lanes not equipped with air suspension, 2.91 is standard. This is a Mercury economy effort and to give you an idea of how much it may mean, the station wagon has a 3.22 rear-axle ratio and Mercurys with standard [*Continued on page* 162]

McCAHILL TESTS

CAR TESTED: **1958 MERCURY PARK LANE**
Engine: **V8** cyls; **430** cubic ins; **360** brake hp; **480** ft-lb max torque; **10.5** to 1 compression ratio. Wheelbase **125** ins; height **56.8** ins; width **81.1** ins; overall length **220.2** ins. Gas tank capacity **20** gals.
PERFORMANCE: 0-30 mph, **4.0** secs; **0-60** mph, **9.6** secs; 40-60 mph, **5.6** secs. Top speed **110-plus** mph. All times recorded on corrected speedometer.

HOW TO DRIVE THE TURNPIKES *Safely*

By Tom McCahill

ONE rainy afternoon, eight years ago, MI editor Bill Parker and I pulled onto the Pennsylvania Turnpike at Carlisle, Pa. That was the eastern end of the pike in those days and it ran west to a point near Pittsburgh. At the time this 156-mile stretch was the longest uninterrupted high-speed road in the world.

The attendant at the entrance told me that the speed limit was 70 but that no one would care if I went a little faster. (As I said—this was eight years ago.) So we did the next 144 miles, including seven slow tunnel passages, in two hours. A performance like that nowadays would land us both in the ranks of the wide pin-stripe suit set for at least a year.

Today you can go from New York to Chicago without hitting a traffic light or crossroad. The tolls are heavy and if you take the whole Gotham-Windy City trick via the pikes it kicks hell out of an eleven-dollar bill. I, for one, think it's worth it, except on weekends and in the happy holiday and vacation seasons when the super roads look like Times Square on New Year's Eve.

Turnpike driving is getting to be a national pastime like TV, coffee breaks, income tax and something they used to

do at Ebbets Field, whatever it was. Some people are cozier than others about playing this game, and while I want to be modest at all times—they *do* pay me for being helpful, especially in the advice department. Here are some tips on driving the turnpikes safely that I have compiled for MI readers:

What to take along? A car, of course. And a good book to read while waiting at the entrance. As the pikes get richer at the rate of a penny a mile per car, there are never enough men to issue tickets or take your money. Bring sandwiches and drinks, hot and cold, because many of the restaurants are overcrowded mash factories staffed by resentful cretins. You can't help using the rest rooms but an hour a day at your local zoo will harden you up for that.

Be sure to take plenty of money because your gas credit card may not be honored. Your company may not service the turnpike gas stations which might not honor the cards of any other company. Both the gas stations and the restaurants are examples of life in a police state where the customers can't hit back by withholding their patronage simply because there is only one store in town—Big Brother's, Inc. I feel slightly kinder toward the Ohio and Indiana eateries, where they treat you more like humans.

Another thing to take with you is a listing of motels in the states you plan to tour. On the Ohio pike there are signs telling you which exits are near motels. But on the others the only way to find out is to hold up the gate tender. On the Penn Turnpike one of the doormen acted as if I'd tried to buy his mother when I asked for motel information—said it was against the regulations for him to plug any private business.

That brings us to the happy topic of how to drive the pikes, which are often billed as "Our Blood-Drenched Highways." People are being killed regularly on the turnpikes and while it is usually the fault of the driver himself the fact must be faced that the turnpikes are inherently dangerous. Long straight roads demand little attention from the driver and tend to hypnotize him; some pikes are blacktopped, which makes night driving very dangerous as vision is cut to the minimum. The big thing to fight first is drowsiness and your Uncle Tom has tried and proven ways to accomplish this.

First, remember that no appointment is really very important, so pull into a service area and pass out if you feel like it. Your family may wail because you're overdue—but they'll wail worse if you're shipped home by Railway Ex-

DON'T invite the undertaker by getting out on left side when parked on pike shoulder.

EXCEEDING speed limit was overlooked a few years ago. Today it's strictly enforced.

MAJOR HIGHWAYS in existence today. By 1970, says McCahill, 90 per cent of driving will be done on turnpikes. Map courtesy Ford Motor Company.

press. The reason I plug the service areas is that there are other cars and people there, so you have less chance of being murdered in your sleep. Some of the things that happen on the pikes are for the true crime magazines rather than MI.

But if you must push on, here are some tips on fighting sleep. When I drive at night without a relief pilot I vary my speed from 65, down to 55, then up to 70, then down again. If that doesn't shake me out of it I pull off the hardtop and walk around the car a few times. Once back in the cockpit I tune in some lousy radio program—one that annoys me enough to keep me awake. If none of this works I pull off the road again, roll the windows almost all the way up, lock all the doors and conk out. (I'm not yellow—I just don't want autograph hounds crawling in the windows.)

Another thing to fight is the boredom of the pikes, which is more dangerous than boredom on a Mediterranean cruise. I divide the day into two-hour periods and try to maintain or better my average speed through each one. As time drags, I shorten the checks on the mileposts to every hour, half hour, quarter hour and so on down to five-minute intervals. I pretend I'm driving at Le Mans, trying to hold a 70-mph average and thereby beat out the Frenchman who puts up the posters and sweeps the track. Or maybe I'm running in the All-African Capetown-to-Alexandria Rally, with a Mau-Mau checkpoint behind every tree. If I drop below average I may give the event to Lord Denthead. No kidding—I really make like an idiot and it often helps

EASY-TO-SEE signs on some turnpikes help travelers to find the freshening-up places.

MONOTONY of turnpike driving can kill you. Learn little tricks to help you stay alert.

keep me on the ball. If it doesn't I pull off the road and wait for the Japanese Sandman.

So you're not asleep, not even sleepy. There are still major hazards. One is, of course, the other drivers. Say a bunch of cars are tooling along at 75, which seems like 30 on a turnpike. The lead creep stops on the hardtop to check his map or look at his stamp collection, causing a bottleneck. If it comes off right this can get to look like Bingo Nite at the Arms and Legs Works. I have seen this happen and I have also seen trailer trucks jackknife and block the entire roadway. That's when you learn to brake at 70 mph or cash in your chips.

You should know about tail breakaway. Two days ago I came into a turnpike curve under a bridge and saw that the road was blocked just ahead by an automotive rhubarb. I hit the brakes hard and the tail broke away. I released the brakes, cut in the direction of the breakaway, straightened the car out, got on the brake again and feathered her down slowly. In a jam like that, always glance at your rearview mirror to see if some sub-moron is tailgating you. Being hit by him is more likely to kill you than hitting the cars ahead. If there is no one behind you the problem is simpler. There is enough shoulder on most pikes to allow you to leave the road fairly safely if you have to.

Cars bunching at 65 mph and better are asking for it, of course. Your best bet is to avoid these picnics at all costs. Learn that and right away you're a better, wiser driver. When you see a tight knot of cars doing 65 or 75 it's a safe bet that they are all lousy drivers. Obviously they don't know what happens when you brake at those speeds.

I have long advocated that each state have some [*Continued on page* 163]

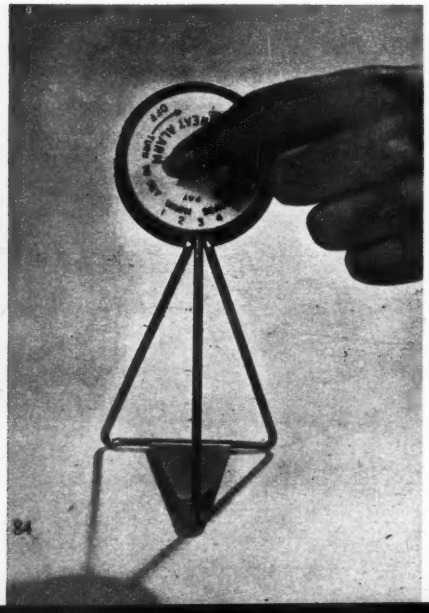
TURNPIKE driving is here to stay. Don't make them "Blood-Drenched Highways."

MECHANIX ILLUSTRATED BRIGHT IDEA AWARD

DING-GO

NYLON DIAL stays cool for fingers no matter how hot the liquid. Stainless base cleans and sterilizes very easily.

10 SETTINGS are provided on Ding-Go heat alarms, guard liquids from overheating.



THE Little Woman's baby formulas, soups, vegetables and sauces can be heated to just the right temperature without constant finger dipping and watching. Ding-Go goes inside pot or pan, rings *ding!* when liquid reaches heat desired. $3.85 (plus 15 cents tax in Calif.) to Ding-Go, Comptche, Calif., will fetch one and save much scouring after boilings-over and cookings-dry. •

WIN $50

MI will award $50 each month to the first person who tells us of a new and useful gadget that is patented and in production. Manufacturers are also eligible for this award. Pictures and a description should be sent to Bright Ideas Editor, Mechanix Illustrated, 67 West 44th Street, New York 36, N. Y.

DID YOU MARRY THE RIGHT GIRL?

By Lester David

SCIENCE is exploding some of your most cherished illusions about marriage. In universities all over America, psychologists, psychiatrists and sociologists are putting "the tie that binds" under the microscope, carefully re-examining the old questions and coming up with some startling answers.

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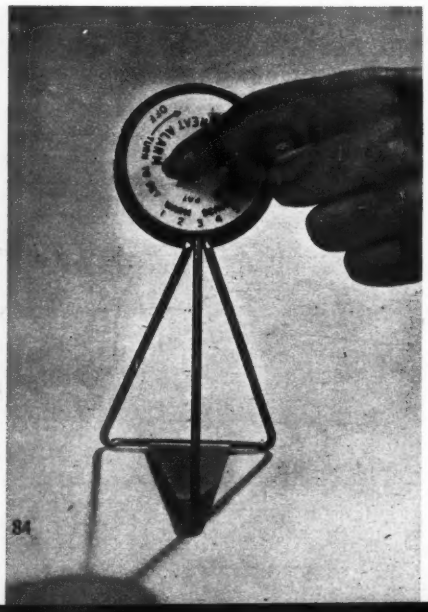

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LITTLE ONES are not necessary around the house to insure success of a marriage, claim the experts.

riage which the social scientists have shattered recently:

1. *Worry over money is a major cause of marital unhappiness.*

It is true, family service organizations report, that money is one of the prime causes of marital discord. But the *amount* of money is actually not the culprit at all!

Numerous studies have revealed that conflicts arise over the way money is spent and managed. Dr. Harold Kenneth Fink, a well-known New York psycho-therapist and marriage counselor, reports four major areas of money friction: the wife spends too much; the wife badgers her husband to earn more so that they can keep up with the Joneses; the husband spends too much; and disagreement over what should be purchased.

2. *A wife should be younger than her husband.*

Drs. Ernest W. Burgess and Paul Wallin studied 4,000 marriages and learned to their astonishment that the happiest men were those who married women a full ten years older than themselves.

The investigators concluded: "The young man who is not bothered by the fact that the girl he dates is older than he is can marry such a girl and have a very happy marriage. A difference of a few years is really of no importance except in the minds of those who believe it to matter."

Of course, the gap cannot be too great. The Burgess and Wallin study made this point: "It is probably true that fewer marriages are happy if there is a difference of from 15 to 20 years or more between the ages of the husband and wife."

3. *No family can be happy unless there are children.*

It isn't true, says Dr. Elizabeth B. Hurlock, psychology professor at the University of Pennsylvania Graduate School following a study. "Presence or absence of children has been found to have little influence on marital adjustments."

Psychologists point out an important fact here. Women, they say, generally harbor the mistaken notion that a marriage which is turning sour can be sweetened instantly by the presence of a baby in the house.

"It's just not realistic," asserts Dr.

Fink. "If two people are basically unsuited, if a number of serious flaws are apparent in their personalities, the appearance of an infant on the scene cannot bring about a sudden and magical cure for the ailing marriage."

4. *Double beds foster a better husband-wife relationship than single beds.*

Dr. Lewis M. Terman and his associates at Stanford University, following an exhaustive study of the factors contributing to marital happiness, found that 596 couples studied slept in double beds and 130 used separate ones. But the two groups were almost identical in their happiness ratings. Concludes Dr. Terman:

"There seems to be no warrant for believing that sleeping in the same bed tends to reduce the dangers of misunderstanding, or for equally positive statements in favor of twin beds."

5. *The husband should be the head of the house.*

Those days are gone forever! Women have unchained themselves from the kitchen and are now calling the signals for the family team in concert with the males. Research has shown that when the husband is very dominant, divorce frequently results. When the wife is dominant, social and sexual maladjustment is frequent. The happiest couple are those who live as partners.

HAPPIEST MEN, surprisingly, are those who marry women older than themselves.

6. *What with all the time and labor-saving devices available today, housewives have considerable leisure time on their hands.*

Prof. J. Roy Leevy of Purdue University embarked upon a lengthy survey of 1,250 city and country housewives, whose husbands represented 28 different occupations. The results? Only ten rural women and 12 urban ones out of the 1,250 had as many as five hours to themselves during their waking moments. The [*Continued on page* 185]

DOUBLE BEDS, contrary to popular opinion, do not foster better husband-wife relations than single ones.

SPECIAL SECTION

SMALL F

By Gordon Wilkins

AMERICA is being invaded by a horde of small foreign cars. This invasion, once only a trickle of imported sports cars, is now getting into high gear with the small family sedan topping the sales figures.

Here's how it has gone: In 1953 the U. S. imported 28,500 foreign cars; 37,800 in 1954. By 1955, as Volkswagen sales began to boom, the total jumped to 62,175. In 1956, when production of U. S. cars slumped from 7.9 to 5.8 million units, foreign car imports soared to 107,431.

The pace is accelerating and the 1957 total was close to 200,000. For the first nine months of 1957, some 144,909 small cars crossed the ocean. Total British imports for 1956 were 38,202. Yet in the first eight months of 1957, British sales in the U. S. rocketed to 59,142. The U. S. has now displaced Australia and New Zealand as the greatest market for British cars of all types.

Germany is now shipping Volkswagens as fast as she can to maintain her lead over other imports. Mercedes-Benz has insured effective distribution by an agreement with Studebaker-Packard. Now other countries are moving in to carve a share of the rich U. S. market. France, which sent only 8,600 cars in 1956, shipped us 30,000 Renault cars alone in 1957. From Italy the trickle of Ferraris, Maseratis, Alfa

Romeos and Lancias is being reinforced with a small flood of Fiats which arrive 1,000 at a time in a specially-equipped ship.

Why the boom? Rising living standards and the mushroom growth of two and three-car families have boosted demand while the ever-increasing size and power of the Detroit product have left the foreign car a free field among those who want a compact, nimble, easy-to-park vehicle with minimum operating costs.

This situation has been developing for a long time. It is now ten years since Sir Leonard Lord, the first man to see a big future for the imported car in the United States, unveiled his Austin A-40 here before anyone in England had heard about it. Sports cars caught on quickly but the going was slower with the family sedans. Millions of dollars were poured into building up sales and service organizations and the cars were adapted more and more to American needs.

The question about the safety of small cars is asked less often now; these babies are remarkably rugged for their size. The small car with its quick steering, roadability and high braking power gives you the best possible chance to avoid an accident. Built to maintain high average speeds on narrow, crowded roads and over mountain passes, the European small car often has big brakes for its size, giving a higher ratio of friction area to car weight than on domestic large cars. This spells freedom from fade in hard use.

Recently there has been a trend to larger engines and higher compression ratios, so although you still get maximum miles per gallon, you don't pay such a premium for it in lagging acceleration. The British Motor Corp. set the pace by standardizing an 8.3 to 1 compression ratio on all their sedans exported to the U. S. Of course, there isn't the effortless surge of power in high gear that comes from power plants of 250 cubic inches and over. But it's fun getting the

1. FORD ANGLIA. 4 cyl. L-head. 36 hp. Top speed 70 mph. 25 mpg. Weight 1,650 lbs. Wheelbase 87 in. Length 149 in. Width 60.75 in. Height 58.75 in. Front engine. Independent suspension. Port of entry price, N. Y., $1,539.

2. ALFA GUILIETTA. 4 cyl. OHC. 50 hp. Top speed 85 mph. 26 mpg. Weight 1,950 lbs. Wheelbase 94 in. Length 156 in. Width 61 in. Height 55 in. Front engine. Independent suspension. Port of entry price, N. Y., $3,497.

3. AUSTIN A55. 4 cyl. OHV. 51 hp. Top speed 78 mph. 26 mpg. Weight 2,320 lbs. Wheelbase 99.25 in. Length 167 in. Width 61.5 in. Height 60.25 in. Front engine. Independent suspension. Port of entry price, N. Y., $2,211.

4. DKW. 2-cycle, 3 cyl. 40 hp. Top speed 80 mph. 30 mpg. Weight 1,980 lbs. Wheelbase 92 in. Length 166 in. Width 66 in. Height 57.5 in. Front wheel drive, independent suspension system. POE price in N. Y., $1,995.

5. RENAULT DAUPHINE. 4 cyl. OHV. 30 hp. Top speed 68 mph. 38 mpg. Weight 1,430 lbs. Wheelbase 89.25 in. Length 155 in. Width 60 in. Height 56.25 in. Rear engine, coil spring suspension. POE price, N. Y., $1,645.

best out of a willing miniature that responds to the touch of a good driver. For those who can't be bothered, many manufacturers now offer automatic clutches giving two-pedal control. Overdrive is also optional on several British models.

If you are interested in automobile design, the imports give you the chance to make a personal trial of advanced engineering features like independent rear suspension, rear engines and unit construction. Your small car may have two, three or four cylinders, air or water-cooled with valves in head, overhead camshaft or no valves at all. You'll find features like simulated leather upholstery and sometimes real leather; individual front seats that give fine support on corners; locking glove compartments; tool kits, and a host of items you used to regard as extras. You will also be surprised at the high quality of the finish.

On those vacation trips you may not be able to carry as much freight as in an American car. But size for size, the designers get a higher proportion of usable space into a small car than on a big one. And there are some neat little station wagons for those who need the maximum carrying capacity. The ride is firmer than on the land cruisers from Detroit but the springs will rarely bottom or float and the road-hugging qualities allow you to corner in safety as though you were driving a sports car.

Now let's take a closer look at the current offerings. For purposes of this review, only sedans with less than a 104-inch wheelbase are included and only those with engines over 500 cc. (30 cu. in.)

Top seller among the imports has for some time been a small, rear-engined beetle-shaped sedan produced in a factory with no legal owner—the Volkswagen. Conceived 20 years ago, the car has now become Britain's toughest competitor in export markets. Around 1,750,000 have been built, breaking all European production records for a single model.

Designed to be unbreakable on Germany's roads, the VW cruises happily at 68 on American highways. Its low-compression engine produces only a modest amount of power for its size but it is rugged and, being air-cooled, has no boiling or freezing problems. Top speed is equivalent to an overdrive, so fairly frequent gear shifting is needed. This

5. Renault Dauphine

1. Hillman Minx

is made easy by a superb synchromesh gearbox. All-independent suspension gives it a goat-like grip on rough roads but it tends to oversteer and swing its tail when lightly loaded, or on wet or icy roads.

Other points of criticism are front fuel tank, small and inaccessible luggage space. (Its once restricted rear vision window has been almost doubled in size for 1958.) The cooling fan tends to howl at over 50 mph. But detail finish is first-class and the adverse points don't prevent VW from exciting enthusiasm and affection among a large army of users.

It is now challenged by France's Renault Dauphine, probably the best rear-engined car to date. Here is a four-door sedan with eye-appeal, all-round vision and astonishing luggage space, that has already collected premier awards in races, rallies and fuel economy contests. Its road holding qualities were demonstrated at Sebring and in the Mille Miglia. In the latter event, a works entry with twin-choke carburetor and five-speed gearbox averaged an amazing 71.8 mph, making it second fastest sedan among the 295 starters, regardless of size. In production form it has a three-speed gearbox which entails some sacrifice in acceleration but it is one of the liveliest and most economical small cars now running. It can be had with Ferlec electro-magnetic clutch to simplify driving.

Cheaper to buy and still more frugal with fuel is the Renault 750, smaller relative of the Dauphine which has been in production without major change since the war. The body has four doors but is smaller and gives the impression of being more tail heavy.

Similar in size is Italy's best-selling rear-engined baby, the Fiat 600. Like the French small cars, this one has a water-cooled four-in-line power unit and all-independent springing by coil springs. Fuel tank and spare wheel are at the front; the body has two doors, and the rear seat folds to form a stout luggage platform. There is also a folding head sedan, an ingenious Fiat specialty. With an engine of only 38 cubic inches, performance is limited. But a smooth-acting four-speed gearbox helps it to make higher averages than you'd expect and there's always the Abarth conversion kit to turn it into an 80-mph grenade that will surprise a lot of sports car owners.

The opposite mechanical layout, front engine and front-wheel drive also has strong support in Europe. France's Dyna Panhard has a race-proved assembly comprising air-cooled flat twin engine, four-speed gearbox and trans-

1. HILLMAN MINX. 4 cyl. OHV. 51 hp. Top speed 80 mph. 28 mpg. Weight 2,180 lbs. Wheelbase 96 in. Length 160.5 in. Width 60.75 in. Height 59.5 in. Front engine. Independent suspension. Port of entry price, N. Y., $2,099.

2. BORGWARD ISABELLA. 4 cyl. OHV. 75 hp. Top speed 90 mph. 24 mpg. Weight 2,204 lbs. Wheelbase 102.5 in. Length 173 in. Width 67.25 in. Height 57.75 in. Independent suspension. Port of entry price, N. Y., $2,495.

3. VOLKSWAGEN. 4 cyl. OHV. 36 hp. Top speed 70 mph. 30 mpg. Weight 1,600 lbs. Wheelbase 94.5 in. Length 160 in. Width 60.5 in. Height 59 in. Rear engine car with torsion bar suspension. POE price, N. Y., $1,545.

4. LLOYD ALEXANDER. 2 cyl. OHC. 24 hp. Top speed 65 mph. 40 mpg. Weight 1,188 lbs. Wheelbase 78.5 in. Length 132 in. Width 55.5 in. Height 55 in. Front engine. Leaf spring suspension. Port of entry price, N. Y., $1,295.

5. VOLVO. 4 cyl. OHV. 85 hp. Top speed 95 mph. 33 mpg. Weight 2,130 lbs. Wheelbase 102 in. Length 177 in. Width 62.5 in. Height 60.5 in. Coil spring suspension and front engine. Port of entry price in N. Y. is $2,238.

2. Borgward Isabella

3. Volkswagen

4. Lloyd Alexander

5. Volvo PV444L

1. MORRIS-1000. 4 cyl. OHV. 37 hp. Top speed 73 mph. 32 mpg. Weight 1,735 lbs. Wheelbase 86 in. Length 149.5 in. Width 60 in. Height 59.5 in. Torsion bar suspension. POE price in N. Y., $1,654.

verse leaf spring front suspension which has monopolized the performance index handicap event at LeMans for years and repeatedly scored class wins in the Mille Miglia and in classic rallies, either in Panhard or Deutsch-Bonnet cars. The Dyna comes as a four-door sedan or two-door convertible with smooth lines of carefully contrived wind-cheating shape.

Third largest sales in Germany (after the VW and Opel) now stand to the credit of the tiny Lloyd. It has a parallel air-cooled twin motor with overhead camshaft driving the front wheels. The ride is choppy and the gears are noisy but extreme economy and low repair costs have won it a big following.

Or how about a three-cylinder motor with the power impulses of a six? In-line two-strokes on Sweden's SAAB 93 and Germany's DKW take this form, both driving the front wheels. Lubrication is by mixing oil with the gas, a familiar routine to users of outboard boat engines. There's a free wheel in the drive line to take care of any uneven running when the throttle is closed. This also permits clutchless gear shifts. DKW also offers an au- [*Continued on page* 186]

2. Fiat 1100

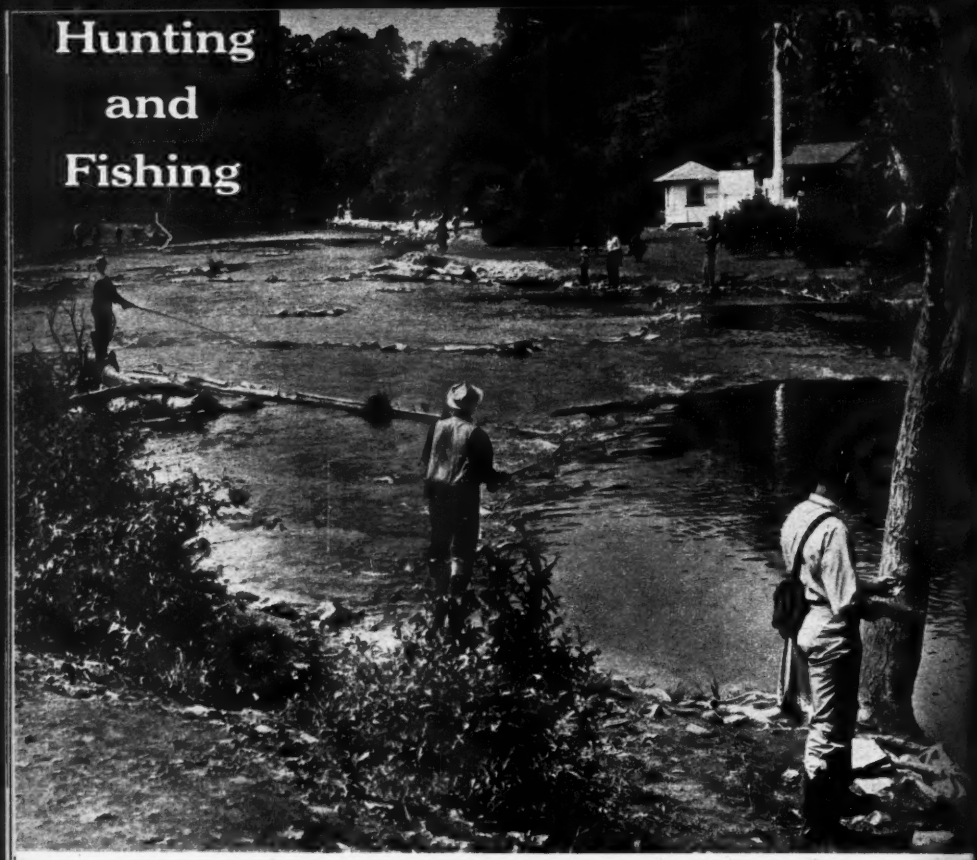
2. FIAT 1100. 4 cyl. OHV. 40 hp. Top speed 75 mph. 28 mpg. Weight 1,880 lbs. Wheelbase 92.5 in. Length 148.5 in. Width 58 in. Height 58.75 in. Independent suspension and front engine. Port of entry price in N. Y., $1,750.

3. SUNBEAM RAPIER. 4 cyl. OHV. 67 hp. Top speed 85 mph. 25 mpg. Weight 2,420 lbs. Wheelbase 96 in. Length 160.5 in. Width 60.75 in. Height 58 in. Front engine. Independent suspension. POE price, N. Y., $2,499.

4. SAAB. 2-cycle, 3 cyl. 38 hp. Top speed 78 mph. 35 mpg. Weight 1,792 lbs. Wheelbase 98 in. Length 157 in. Width 61.5 in. Height 57.25 in. Independent suspension system and front engine. Port of entry price, N. Y., $1,895.

5. TRIUMPH. 4 cyl. OHV. 100 hp. Top speed 78 mph. 40 mpg. Weight 1,680 lbs. Wheelbase 84 in. Length 145 in. Width 58 in. Height 60 in. Independent suspension and front engine. Port of entry price, N. Y., $1,699.

6. OPEL REKORD. 4 in-line cyl. 52 hp. Top speed 64 mph. 30 mpg. Weight 1,966. Wheelbase 97 in. Length 166 in. Width 64 in. Height 59 in. Coil spring suspension system and front engine. Port of entry price, N. Y., $1,957.



HERE'S WHAT'S BITING THE FISHERMEN

By Wynn Davis

● *A friend and I are planning a trout fishing vacation in June or July. What is the best trout stream in the U. S.? We want plenty of solitude, lots of fishing room on the stream, good big trout and first class accommodations at a reasonable price.*

Jerry Untermeyer
St. Louis, Mo.

I'd be a modern Solomon if I could put the finger on the one best trout stream in the country. But here are a few dandies that will meet all of your requirements. The Gunnison River in Colorado for big brown trout, especially good in mid-June during the willow fly hatch. The Big Hole River near Livingston, Mont., for browns, rainbows and white fish all summer. The Salmon River in Idaho for rainbows and one of the best float trips in the country. North of you most of the big rivers that empty into Lake Superior from Upper Michigan are fine rainbow trout streams. If you plan on the East, your first choice of brown trout streams should be New York's Au Sable River from Lake Placid to Wilmington between June 10 and 18. If you want speckled trout try the Penobscot River system of streams in Maine, late June and early July.

● *It's easy for you to sit down and write about how to catch big bass and dream up stories about them. But where does a fellow go to catch them? I live in Brooklyn, N. Y., and can't find any good bass fishing this side of Florida, which is too far for week-end trips. Where are all of those tackle busters we are supposed to catch?*

Fred Barney
Brooklyn, N. Y.

The Eastern shore of Maryland is only about six hours' drive from Brooklyn and is full of small ponds and lakes that are so chock-full of big bass that you'll think you're dreaming when you start fishing them. Chestertown, Salisbury and Princess Anne are good towns to make headquarters while exploring for the pond that looks best. Try them with bass bugs in July and August and see what happens.

● *I love to spin for bass and trout, but am about ready to throw my rod away because my reel keeps slipping around on the handle and sometimes drops just when I have a good fish on. Is there any cure for this?*

John Mullin
Chicago, Ill.

Indeed there is—an easy one, too. Cut a small strip from an old inner tube about ¾ of an inch wide and three inches long. Cement this to your rod handle where you usually mount your reel. The rubber does the trick. Some day spinning rod manufacturers will come up with a practical reel seat, we hope. But don't wait; cut that inner tube.

● *Which will take the most trout day in and day out—worms, wet flies or dry flies?*

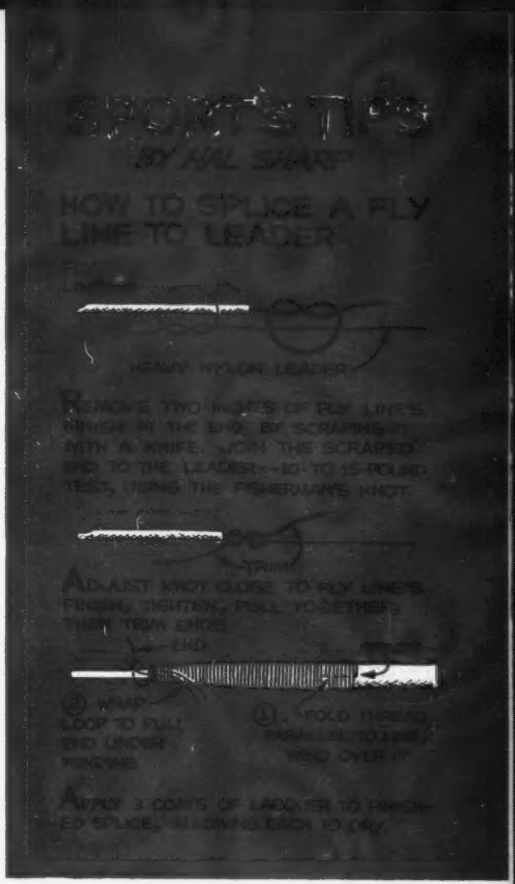
Collin Campbell
Washington, D. C.

Wet flies, if you fish them properly.

● *I am told that you can get rid of the muddy taste in bass caught during the summer by skinning them. How is this done? I skinned several last night and each one took me over 20 minutes. Obviously I did it wrong.*

Bill Summerfield
Roanoke, Va.

Take a small, sharp knife and cut a line down the center of the back and around each side of the dorsal fins. Pull out these fins with a pair of pliers. Do the same down the belly and around the anal fin. Then cut completely around the head. Grip a piece of skin with the pliers and pull toward the tail. The skin should peel off easily in two strips, one from each side of the fish. You should be able to skin four or five bass in 20 minutes.

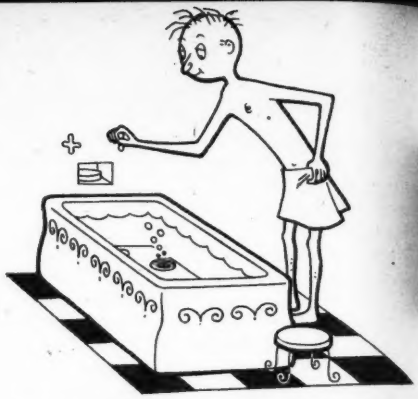


● *I need a new fly rod for trout, but find so many different makes in the stores that I don't know which to buy. Can you tell me how to select the best fly rod from all of this confusion of brands?*

Bob Willousky
Salt Lake City, Utah

Competition today keeps all makes in the same price [*Continued on page* 179]

BUG REPELLANT paint for boatmen to keep pestiferous insects from making a home in craft's hull. Marilyn Stearns, Antioch, Ill.



SILENT RUNNING bathtub that fills from bottom up, eliminating roaring waterfall-like sound. Richard Franke, Houston, Texas.

HANDY STEP LADDER for small kitchens that could quickly be folded flat for storage under sink. Max L. Anderson, Denver, Colo.

INVENTIONS WANTED!

Is there a gadget you think should be invented? If so, send its description to Inventions Wanted Editor, MECHANIX ILLUSTRATED, 67 West 44 St., N.Y. 36, N.Y. Each one printed will be awarded $5.

SAFETY IRON that automatically shuts itself off if handle is not grasped within five minutes. Frank Berry, Teaneck, N. J.

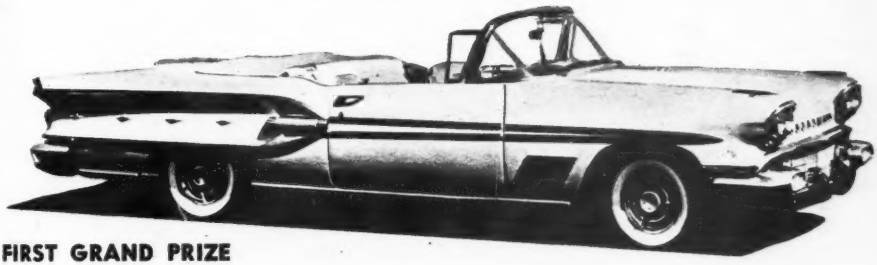
GARAGE with accessible slide-out carport for use by guests or for summer parties. Chester A. Smith, Jr., Baton Rouge, La.

MI's Fabulous

$75,000 CONTEST!

SIX BEAUTIFUL 1958 PONTIACS
AND 355 OTHER PRIZES

ARE you a good judge of your fellow man—especially of his tastes in reading matter? Then MI's $75,000 Contest is just the thing for you for it offers a chance to test your knowledge of human nature—and possibly win a brand-new 1958 automobile, an exciting trip to Alaska or any one of 361 wonderful prizes. From lists of 15 major articles in three issues you simply pick the five you think most people will like best. Now look over the prizes on the next ten pages, study the rules carefully and you're ready to start. •



FIRST GRAND PRIZE

1958 PONTIAC BONNEVILLE convertible with power steering and brakes, Hydra-Matic, radio, heater and other extras. Worth about $4,250 delivered.

SECOND GRAND PRIZES

FIVE 1958 PONTIAC STAR CHIEF four-door Catalinas, perennial favorite with the car-buying public. Beautiful sedan comes with Hydra-Matic, power brakes and steering, radio, heater and other extras. Worth about $3,900 delivered.

PRIZE LIST CONTINUED ON NEXT PAGE

PAN AMERICAN WORLD AIRWAYS, World's Most Experienced Airline, takes you on a $2,000 wilderness fishing trip to Alaska and the Arctic Circle: boats, guides, gear—the thrill of a lifetime!

BSA Model D3 Bantam Major motorcycle, British-built champ of economy with two-person seats and smooth-riding suspension—$463 delivered.

11th-14th PRIZES

10th PRIZE

EVINRUDE 35-hp Big Twin electric-starting outboard, the favorite of high-performance engines—powerful but quiet. Worth $585.

GENERAL MARINE M-112 Torpedo, the fast 12-ft. runabout with big-boat features. Ready for the water. Priced at $422.

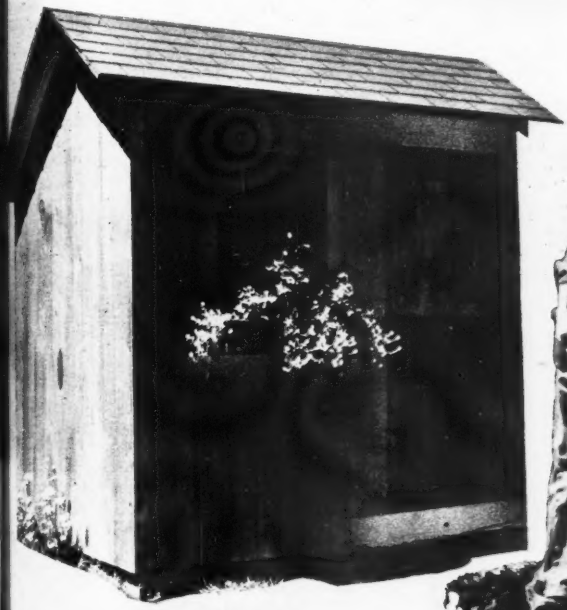
15th-16th PRIZES

8th PRIZE

LONE STAR'S 16-ft. cruisette, the Holiday. Versatile and smooth craft has roomy 6x12 ft. car-style cockpit. Less motor and top. "A $995 gem."

9th PRIZE

WAGEMAKER'S beautiful 14-ft. Ply-Lap clinker-built boat is double hulled—lapstrake over molded plywood. Brand-new on the market. Less engine—$750.



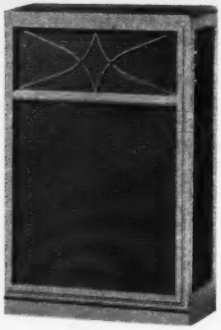
17th-20th PRIZES

MOHAWK LOG CABINS of New York presents a knotty pine pre-fab cabin for a tool house, backyard study, overnight shelter for hunter, etc.—worth $350 delivered.

21st-25th PRIZES

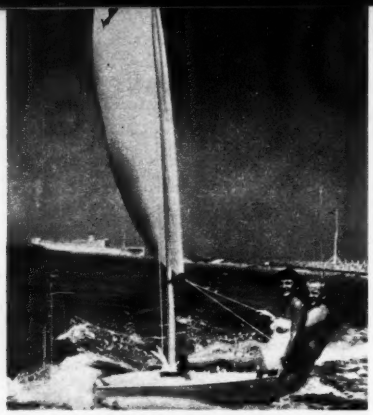
GRAVELY home-garden tractor, powerful 5-hp workhorse for a variety of jobs; 30 attachments available. It's easily handled and maneuverable—tractor only, $339.

Contest arrangements by The S. Jay Reiner Co., Inc.



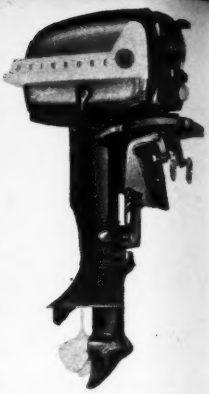
26th-27th PRIZES

JENSEN Tri-Plex TP-200 Reproducer, complete three-way hi-fi speaker system in lovely cabinet—$329.50.



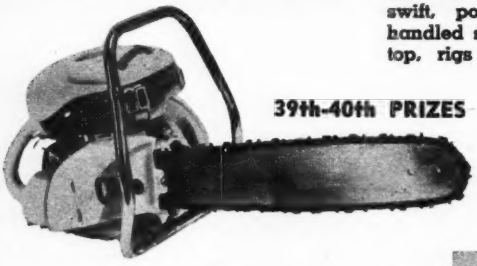
28th-29th PRIZES

ALCORT Sailfish, America's swift, popular and easily handled sailboat; fits on car top, rigs in a flash—$317.



30th PRIZE

EVINRUDE 10-hp Sportw with the Roto-Matic spe control; fast, quiet—$31



39th-40th PRIZES

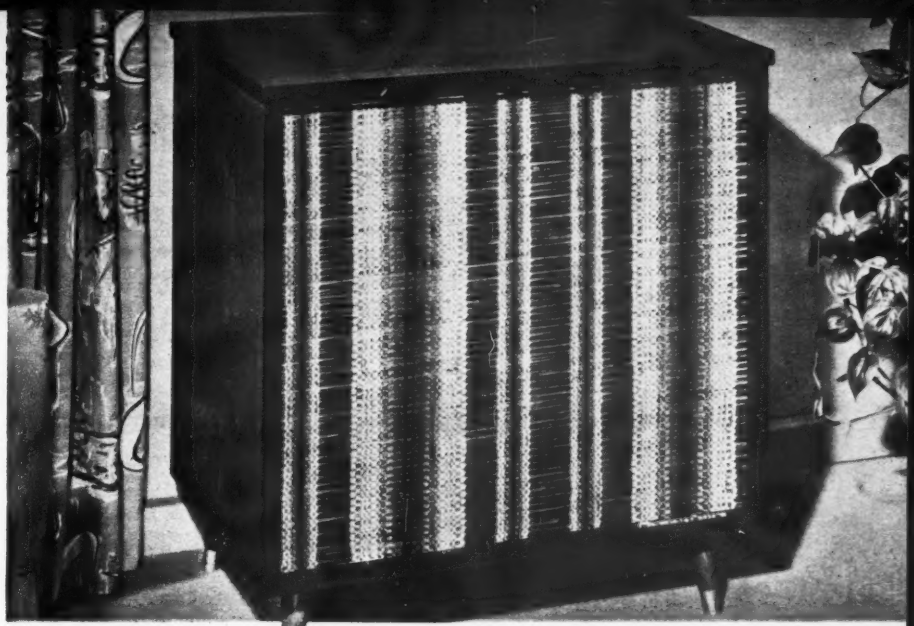
PIONEER model RA chain saw, a lightweight that is rough and tough, fast-sawing and yet safe; you can use it anywhere—$260.

41st-45th PRIZES

LA PRIMADORA s $212.50 award of 50 famous Optimo Kings, finest Havana cigars, and a solid gold Stratoflame butane gas lighter, a jewel of beauty.

46th-55th PRIZES

HELBROS "celebrity watches" with 17 lifetime jewels and an unbreakable mainspring. Winner has choice of man's model carrying 11 diamonds or lovely woman's model with 24 sparkling diamonds—$200.

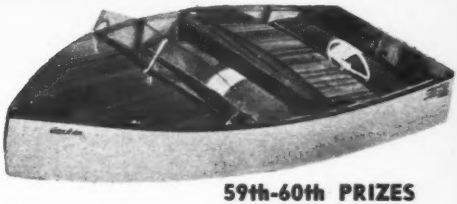


31st-38th PRIZES

STROMBERG-CARLSON Jubilee hi-fi with 4-speed changer, AM-FM radio—$309.95.

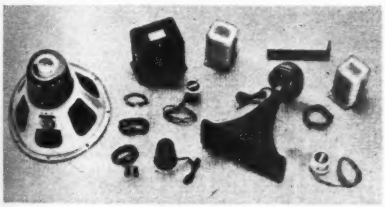
56th-58th PRIZES

JENSEN Tri-Plex do-it-yourself speaker kit: all parts and enclosure plans—$169.50.



59th-60th PRIZES

GENERAL MARINE KB-14 deluxe Speedliner, a 14-ft. family runabout kit worth $169.



61st-64th PRIZES

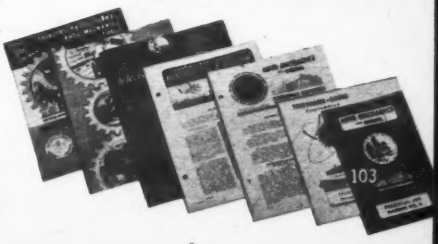
McCULLOCH model MAC-35 chain saw, rugged 20-pounder that is multi-purpose, dependable and safe; high performance, low-cost to run. Handy prize valued at $165.

65th PRIZE

EVINRUDE 3-hp Lightwin with famed Fisherman Drive; it goes and stows anywhere—$160 value.

66th-69th PRIZES

NATIONAL SCHOOLS gives you one of its famous home study courses, the easy way to learn a trade. Choice of Radio, TV, Electronics, Auto or Diesel—$159 per course.



70th-89th PRIZES

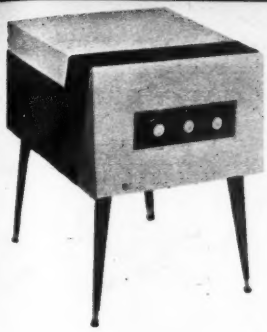
HOMKO THUNDERBIRD self-propelled rotary power mower is rugged, will go anywhere. Machine has front-wheel drive, two-speed transmission, fingertip control and the exclusive Flexor blade. Priced at $154.50.

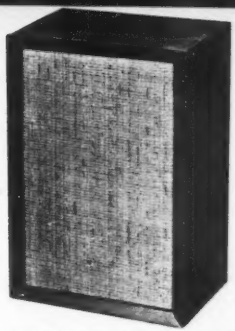
126th-135th PRIZES

AMERICAN TACKLE & EQUIPMENT Co. gives you Ocean City, Montague and True Temper tackle, $119 dream combinations good for spinning, bait and fly fishing.

136th-142nd PRIZES

RAY-O-VAC award of three lanterns, four flashlights with Sportsman and Leak Proof batteries plus a battery-run phono-radio. $117.





90th-97th PRIZES

DYNAMIC Quadnaural two-piece chairside hi-fi ensemble has four-speed changer and four speakers, makes music live for you. Prize value $150.

98th-107th PRIZES

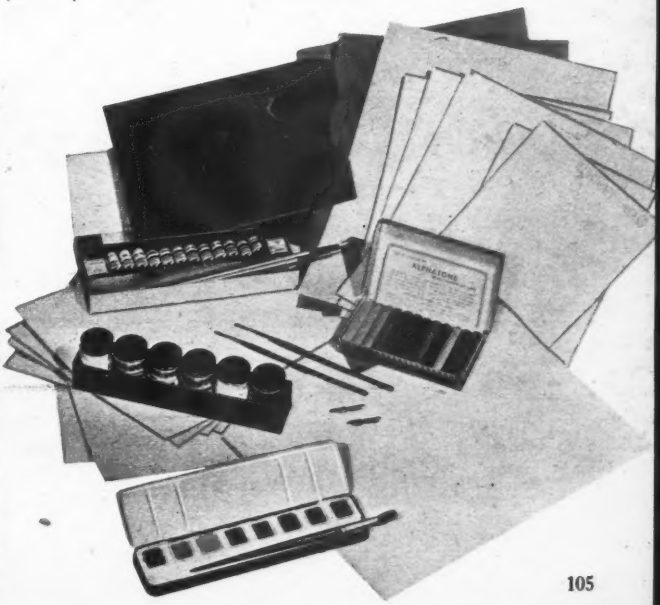
PROTO TOOLS—the name means PROfessional TOols—makes up $140 kit of high-quality hand service tools for you. Here is everything required for virtually any job that you may run into. Includes open-end and box wrenches, combinations, sockets, saw, pliers and case.

108th-110th PRIZES

DETECTRON's extra sensitive 711 metal detector—$138.50.

111th-125th PRIZES

THE WASHINGTON SCHOOL OF ART provides art training right in your home with easy, clear lessons—$125.



143rd-145th PRIZES

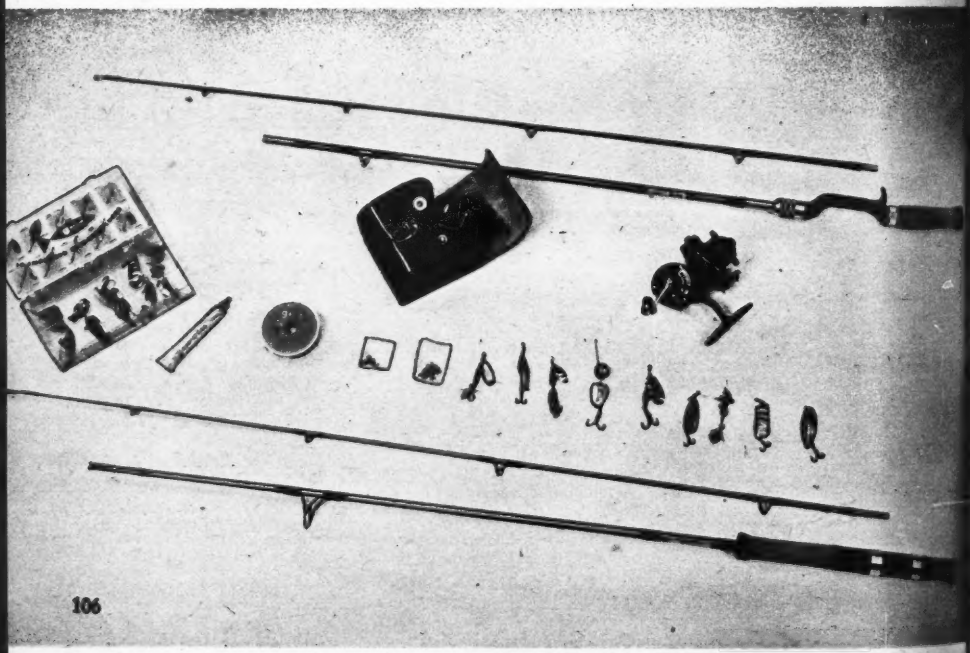
DETECTRON's brand-new buried treasure finder—$110.

146th-170th PRIZES

VIEWLEX Project-O-Matic slide projector gives you ultimate enjoyment of your favorite color slides, is easy to operate. The $90 projector plus $15 in extras—a $105 prize.

181st-200th PRIZES

GARCIA fishing outfit with Mitchell Cap spinning, Abu-matic spin casting reels; two Garcia Gold Bond rods, lines and lures—all the fisherman needs in a $101.50 outfit.

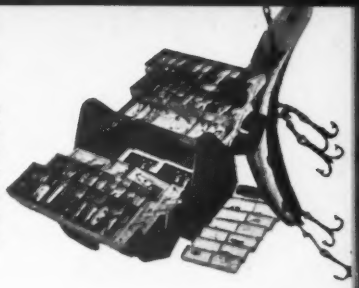


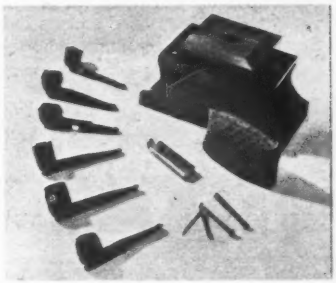
171st-180th PRIZES

U. S. SCHOOL OF MUSIC home study courses in piano and guitar let you learn music at home without a private teacher and in a short time with simple lessons—$104.

201st-205th PRIZES

HELIN TACKLE Co. lure assortment of over 30 styles, 100 separate lures for every use from flyrod fishing to spinning; with sturdy metal case—$101.35.



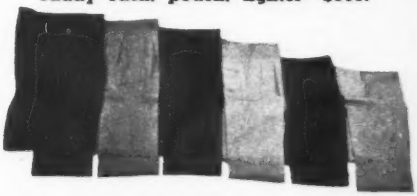


206th-210th PRIZES

ROGERS IMPORTS offers six pipes, caddy rack, pouch, lighter—$101.

211th-220th PRIZES

BEAR archery set of hard-hitting Kodiak laminated glass bow and 6 field, 6 hunter arrows, glove, quiver and armguard—$100.05.



221st-225th PRIZES

BOTANY slacks with Motional Design for comfort, style—a $100 wardrobe.

226th-245th PRIZES

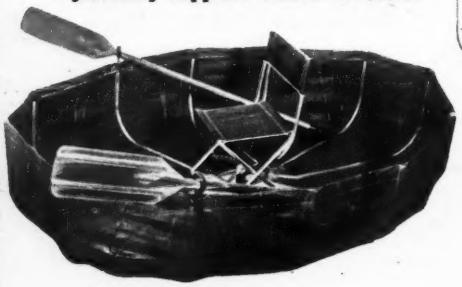
BURKE, first in golf since 1910 and America's oldest exclusive club-maker, presents a set of Autograph clubs. Beginners or experts play well with Burke clubs, so perfectly balanced that they'll give you a clean, sure hit under all conditions—$100.

246th-250th PRIZES

REVERE $100 wardrobe for the active sportsman: sweaters, jackets, shirts. Some designed by Cary Middlecoff.

251st-255th PRIZES

KINGS MEN toiletries to make a man feel like a king every day; a year's grooming supplies valued at $99.95.



316th-320th PRIZES

PORTA Co. of Canton, Mass., presents a Packet Folding Boat weighing only 24 lbs. Ready to use—$98.50 delivered.

256th-280th PRIZES

PRECISION RADIATION INSTRUMENT'S famed Lucky Strike geiger counter, sensitive but stands rugged use—a $99.50 value.

321st-330th PRIZES

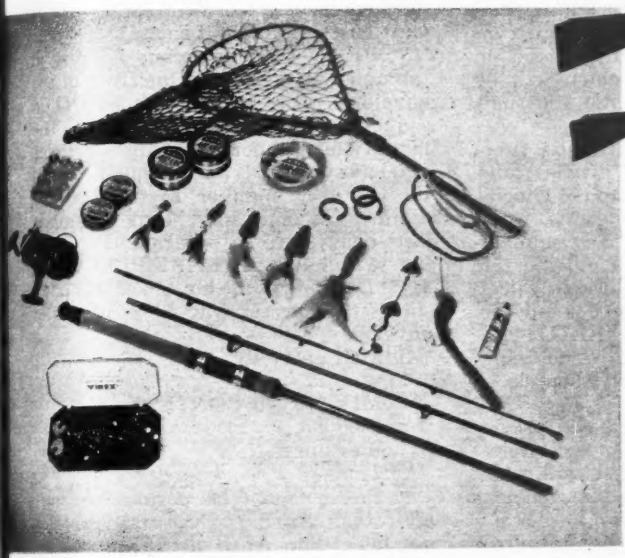
ZEBCO reel assortment with Feathertouch Control, featuring Model 44 which boasts famed anti-reverse and fast retrieve—$96.40.

341st-350th PRIZES

GARRARD model RC98, one of the world's finest record changers, plays four speeds auto and manual; pusher platform protects records; has variable control on all speeds—an $89.60 gem.

281st-295th PRIZES

SHERWIN CODY's renowned home course in English enables you to improve your own powers of self-expression. Plus choice of music-study course—$99.50 package.

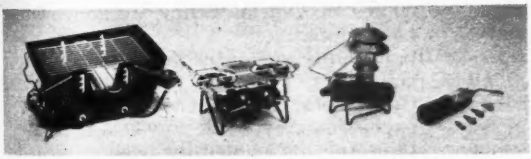


336th-340th PRIZES

MOSSBERG, the name that means accuracy, brings you the Mossberg 200K 3-shot pump 12 ga. multiple-choke shotgun (weighs only 7½ lbs., perfect balance, velvet smooth); the Mossberg 342K .22 carbine, 7-shot, bolt-action, clip-loading, only 5 lbs. light; and Mossberg Covey Hand Trap that throws 1, 2 or 3 standard clay targets, simple to operate, light, portable, strong and it has no moving parts!—a $94.85 value.

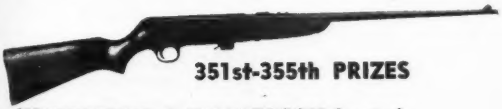
296th-315th PRIZES

AIREX complete spinning kit including a Larchmont reel, Compact Carrier rod, reel, line, lures, net—a $98.90 prize!



331st-335th PRIZES

BERNZ-O-MATIC $95 bottled-energy group of indoor-outdoor grille (produces charcoal flavor), stove, lantern, torch.

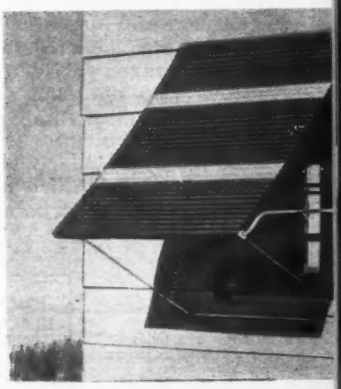


351st-355th PRIZES

HARRINGTON & RICHARDSON hunter's pair of a Lynx semi-automatic .22 rifle (shown), Topper 12-gauge shotgun, cases—dependable, accurate—$89.45.

356th-361st PRIZES

FLEXALUM Roll-Up sun or weather awnings; custom fit any window—$85.



TURN PAGE FOR OFFICIAL RULES AND ENTRY COUPON

The Official Rules for MI's $75,000 Contest

Read All of Them and Obey Them

1. MI's $75,000 CONTEST is a test of your ability to select the most popular of 15 specified articles in each of the January, February and March 1958 issues of MECHANIX ILLUSTRATED.

2. In each of the three contest issues there will be printed a list and description of 15 articles appearing in that issue. You will select what you consider will be the most popular items on that list, each item of which will be identified by a number, title and summary of contents.

3. After studying the list (or, preferably, reading the actual articles) and making your choice, turn to the Official Entry Coupon. Alongside the word FIRST, write the identifying number of the article you believe will be the most popular on the list. Next, select the other articles you believe should be rated SECOND, THIRD, FOURTH and FIFTH in popularity and write their numbers in the corresponding spaces on the coupon.

4. Entries will be judged and prizes awarded by comparing your selections with a national survey which will rank in order of popularity the five articles on each list which readers like best. Judging will be done by O. E. McIntyre, Inc., whose decisions will be final. All entries become the property of Fawcett Publications, Inc., and none will be returned.

5. PRINT your name and address on the coupon. When you have completed all three coupons from the January, February and March issues pin, paperclip or staple them together and mail all three in the same envelope, as described below. Do not mail single coupons. Do not include anything in the envelope except your entry.

6. Winners will be selected on the basis of entries which make the most accurate choices of popular articles in all three lists. (EXAMPLE: If several entries have correctly chosen the most popular articles in each of the three lists, judges will proceed to SECOND choice selections. If ties still remain, judges will proceed to THIRD choices, etc., until all winners are selected.) In case of ties, entries postmarked earliest will win. (So complete your entry and mail it early!)

7. PRINT your name and address in the upper left corner of the front of the envelope. Just beneath this, PRINT in sequence, separated by hyphens, the identifying numbers of the three articles you have chosen as most popular. Print the January number first, February number second and March number last, being sure to separate the numbers with hyphens (EXAMPLE: 66-72-81). Drawing at the bottom of this page shows the correct way to address the envelope.

8. Mail entry to:

MI's $75,000 CONTEST
Box 20
Westbury, N. Y.

9. Entries must be postmarked not later than April 1, 1958 and received not later than April 10, 1958.

10. It is not necessary to buy MECHANIX ILLUSTRATED to enter. Free entry blanks and rules may be obtained from newsstands during the final month of the contest. Accurate hand-drawn copies of Official Entry Coupons will be accepted.

11. Only one entry per person. This contest is open to any resident of the Continental United States or Canada except employees of Fawcett Publications, Inc., its wholesale distributors and advertising agencies and their employees and families.

12. Winners will be notified by mail and their names published in the August 1958 MECHANIX ILLUSTRATED. •

Print your name and address here. → JOHN J. DOE
111 MAIN STREET
CENTERTOWN 13, ILL.

Put numbers of articles you have chosen as most popular here. → 66-72-81

MI's $75,000 CONTEST
BOX 20
WESTBURY, N.Y.

CORRECTLY addressed envelope for an entry appears at left in small scale. Be sure to print your name and address on your envelope.

Article Summaries And Official Entry Coupon

ARTICLE LIST NO. 2

Summaries of articles from February 1958 MI

Select the five articles you believe will be most popular from the list below and write the identifying numbers in proper blanks on Coupon No. 2. See rules for full details.

1. **A Cure For The Common Cold?** Science makes a breakthrough in the war against man's ancient ailment.
2. **Manned Space Scouts.** Two experts envision a spaceship which could thwart attacks by hostile satellites.
3. **Hunting Treasure With Underwater TV.** Specially-built television cameras help divers salvage sunken ships.
4. **McCahill Tests The New Mercury.** Automotive writer describes the 1958 model of a famous car.
5. **How To Drive The Turnpikes Safely.** Tom McCahill's advice on the right way to handle a car on super-roads.
6. **How To Clean Up In Business.** New company is founded on a formula for a unique do-it-yourself rug cleaner.
7. **Did You Marry The Right Girl?** Researchers find many hallowed beliefs about marriage just aren't true.
8. **Small Foreign Cars.** Facts the automobile fancier should know about the popular little models from abroad.
9. **All About Casters.** Ingenious ways to use wheeled helpers for moving awkward or heavy objects.
10. **Build This Model Of The USS Forrestal.** Detailed plans tell you how to create the carrier in miniature.
11. **Heavy Duty Workbench.** Complete instructions for building your shop's most important piece of equipment.
12. **Transistor Radio.** You can build your own portable radio by assembling a simple electronic kit.
13. **"Stop Killing Your Car!"** An expert tells how intelligent care will make your automobile last longer.
14. **A Ten-Dollar Telescope.** Step-by-step plans for constructing a remarkable 200-power peephole to the heavens.
15. **The Saw.** Our most efficient cutting tool comes in a score of different types; how to choose and use them.

NOTE: Entry Coupon No. 1 and the January article summaries are reprinted on page 163 of this issue.

HOW TO WIN

COMPETING in MI's $75,000 Contest is simple and you will find pleasure in testing your judgment of people's preferences in reading matter. The most important key to winning one of the 361 great prizes is—OBEY THE RULES! You cannot win if you break *any* of the rules. Read them over two or three times. Pay particular attention to Rules No. 5 and 7 instructing you to *print* your name and address on each coupon and on the front of your envelope. Don't overlook the requirement in Rule No. 7 to print, *on the outside of your envelope*, the numbers of the three articles you have chosen as most popular. Finally—in case of ties, entries postmarked earliest will win. So mail early!

OFFICIAL ENTRY COUPON

NO. 2 FEBRUARY 1958 ISSUE

FIRST.....

SECOND.....

THIRD.....

FOURTH.....

FIFTH.....

In the blanks above write the identifying numbers of the articles you have chosen as the most popular in Article List No. 2 (February 1958 issue—list appears at left). Print name and address in spaces below.

NAME.....

ADDRESS.....

CITY.....STATE.....

Clip this coupon along broken line; when you have filled in all three coupons pin, paper-clip or staple them together before mailing them in.

OLDSmobility

A new mode in motion that takes you out of the ordinary into the Rocket Age!

All '58 Oldsmobiles feature Safety-Plate Glass . . . all around!

Wherever you go, it's adventure ho! For the '58 Olds is an inspired car . . . with an exciting mobile look that mirrors your own good taste. It confirms your own good judgment, too. For the new Rocket Engine brings you a marked advance in fuel economy . . with all the power you can use! Discover, too, the total thrill of *OLDSmobility!* Ride on air . . . with New-Matic Ride*—a *true* air suspension that's incredibly smooth and comfortable. Come have a new adventure at your Oldsmobile dealer's . . . in a Rocket road test now!

OLDSMOBILE DIVISION, GENERAL MOTORS CORPORATION

*Optional at extra cost.

OLDSMOBILE

1908 GM 1958

FORWARD FROM FIFTY . . . INTO THE ROCKET AGE

Mail for McCahill

Uncle Tom is sorry he can't answer all his mail personally. In this column he'll answer the most interesting letters. Write to him at MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N. Y.

● *The other night my husband struck a skunk on the way home. Being soft-hearted, he got out of the car with a flash-light to make sure the animal was dead. It wasn't. From then on home the trip was almost unbearable. I took his suit and other clothes and stuck them in our Laundromat with two large cans of tomato juice, which is said to neutralize the odor. Apparently there wasn't enough tomato juice, and my husband's suit was ruined. Just thought I'd pass this on as a warning.*

Mrs. J. A. Hester
Pittsburgh, Pa.

Glad to know it. Next time I wash my suit I'll leave out the tomato juice.

● *I have read your columns for many years and have never seen a letter asking about these high-powered new-fangled carburetors with high mileage features. I've been told that such things have been developed and patented but patents were bought up by many of the major oil companies before they could be put into production.*

W. A. Toman
Bethel, Kansas

This is an old, old story and there isn't an ounce of truth in it, believe me. If Buick could buy a carburetor that would give them 40 miles to a gallon, let's say, and still keep their present power and performance, the number of millions that an inventor could ask for this design from Buick would flip a Rockefeller. If GM had such a carburetor, imagine how their sales would jump. There aren't too many oil companies with as much dough as General Motors.

● *I see that in the September issue of our favorite fish-wrapping material the photo that usually heads your mail column has been replaced by a drawing of you. Finally broke the camera, eh? What kind of a job, if any, did you have before you began dissecting cars for MI?*

Billy Springer
Birmingham, Ala.

I was a dinosaur embalmer.

● *How about an occasional tip from you on good books to read? This would be a real service, and even you must realize you can't write everything.*

Geo. Harper
Hartford, Conn.

Okay, George, glad to help out. The following books I strongly recommend: Playing Pool For Pleasure And Profit, I Was A Vichysoisse Addict, 1001 Uses For Your Old Socks, Girls Made Easy, The Gourmet's Guide To Greenland, How To Water-Ski On Land, and Confessions Of A Streetcar Motorman.

● *I've been told that you can remove all the carbon from an engine by pouring water in the carburetor while the engine is running. If so, is this harmful?*

C. Goodman
Raleigh, N. C.

A lot of carbon can be removed by injecting water but it calls for the finesse and dexterity of a brain surgeon. Too much and you can explode the top off a piston head like a walnut, even crack the block. A small *spray*, as out of an atomizer, will steam out a lot of small carbon chunks. Carbon has even been removed with a welding torch inserted through the spark plug holes—and sometimes by sandblasting. But the best way, still, is to remove the heads and scrape it out.

● *In your Edsel story (MI Sept. '57) you made the following statement, "You don't have to be brighter than a rusty nail to know that not all prospective car buyers like the same things." For your information, a rusty nail is rarely considered bright.*

Howard K.
Philadelphia, Pa.

That isn't the only thing that isn't bright, buster.

[*Continued on next page*]

Winfield Foster of Chicago recently sent me a manuscript he'd written in 1932, outlining his designs for safer cars and safer travel. The article had plenty of real good meat and, though it was written 25 years ago, it was full of ideas that the Detroit boys are kicking around today. He predicted four-lane highways with no intersections (our modern turnpikes). His safety design called for roll bars built into the body, with padded tops (certainly still needed); slanted windows to stop light glare, and removal of the running boards to get full body width. As we have requested in the past 12 months, he wanted better spring bumpers to absorb shock, padded dashes, etc. One of the most interesting lines in his article was that "until people ask for safe cars we won't have them." Brother, that's the truth. We elect Mr. Winfield Foster the Jules Verne of the automotive business.

● *Do you think necking in a car is dangerous?*

Frank Harper
Philadelphia, Pa.

Not if you don't give your right name.

● *Just got my new MI in the mail and see you now own a boat. If I'm not wrong it looks like an Egg Harbor 30 which is not only one of my favorite boats but one I hope to own some time soon. How about you writing some boat articles like your car articles?*

Frank Edwards
Atlantic City, N. J.

You're right, it is an Egg Harbor 30. But MI Editor Bill Parker has issued orders that if I try to sell him one more line a month on any subject, I can turn in my stop watch.

A Letter From McCahill To Any Legal Beagles In The Audience:

About an hour ago I was challenged by a beady-eyed cop with the following melodic prose, "Dontcha know any better than to park near a fire hydrant? Get that thing outta here!" Here's my problem: Being a country boy from the center of New York City, I have always been under the impression that there was a difference between *parking* and stopping or standing. Naturally I know that you're not supposed to *park* by a fire hydrant. But this happened in the vicinity of a rural post office and I kept the engine running and never left the driver's seat while my passenger went in to mail a letter. Frankly, I'm puzzled. In the event of a fire, all I had to do was push the button and whiz out of the way. I was not blocking traffic but was stopped several feet from the hydrant, sitting behind the wheel with the engine running. Will someone clue me once and for all? I was born stupid about such things.

● *I would like to have the McCahill sent to me.*

Denis Schirck
Carroll, Iowa

Folded or unfolded?

● *I had an accident recently when a hornet stung me in the back, which caused me to drive off the road and into a tree. The police gave me a ticket for reckless driving and I was fined $15 in spite of the fact that I told the judge exactly what happened. I feel this was extremely unfair. Do you agree?*

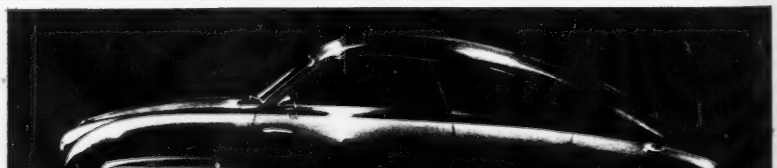
Mrs. K.T.
Darien, Conn.

One sting doesn't deserve another. Once, when I was driving through Cocoa, Fla., at noontime, a wasp got well up my trouser leg before going to work. The traffic cop on duty got a little stuffy about my leaping from the car and yanking off my trousers in the middle of what passes for Cocoa's Times Square.

● *As there are a great many brake failure accidents, why don't they put dual master cylinders on the cars—one for the front wheels and the other for the back? In case one goes out you still have the other. It's at*

[*Continued on page* 116]

SAAB



For name of nearest dealer write Saab Motors Inc., 405 Park Avenue, New York 22, N. Y.

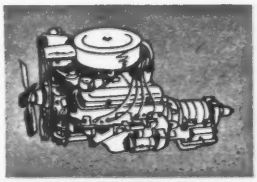
BIG BOLD CHIEFTAIN

PONTIAC

Boldest Advance in Low-Price History!

Get an eyeful of Pontiac's Bold New Chieftain, the totally new creation that shatters every low-price-field tradition in size, luxury, handling and response! Here is freshness that literally begins at the foundation of automotive design with a completely new frame, chassis and body. And to make this dream on wheels complete, there are lavish, new color-coordinated interiors, complete with wall-to-wall carpeting, *even in the lowest-priced model!* See and drive this Bold New Chieftain . . .

THE LOW-PRICE FIELD NEVER HAD IT SO GOOD!



TEMPEST 395 PERFORMANCE

Try the jeweled-action response of Pontiac's brand-new engine! You can choose from four horsepower ratings—including Tri-Power Carburetion and Fuel Injection*.*

**An extra-cost option*

PONTIAC MOTOR DIVISION OF GENERAL MOTORS CORPORATION

[Continued from page 114]

least some brake until you can get hold of the hand brake.

E. Recke
St. Louis, Mo.

Hudson had a pretty good idea when they had a combination hydraulic-plus-mechanical braking system for just such accidents. Incidentally, don't depend too much on the hand brake, as very few cars can be stopped effectively with today's "parking brakes" at normal highway speeds.

● *I am a county employee working for a monthly salary and ten cents a mile travel expenses. The ten-cent rate has been in effect for three years now. This rate is set by the county board of supervisors. A new supervisor now has the idea that this rate is too high. "I'll drive all day for ten cents a mile and ask no salary," he says. I think he's crazy. I average about 19 miles to the gallon (34.1 cents per gallon) and drive about 7,200 a year on the job.*

Name withheld
Wis.

Drive further. At 7,200 miles a year you'd be on the losing side. However, if you drove 30,000 miles or more every year at ten cents a mile you'd be able to retire in a few years on the surplus.

● *I was driving at high speed on the Indiana Turnpike recently when a large pheasant flew into my windshield and ruined it. Fortunately there was no one in the passenger seat. Does this happen very often?*

O. B. Clark
Seattle, Wash.

Not with the same bird.

● *Hi!*

John C. Holzinger, Jr.
Struthers, Ohio

P.S. Made this a short letter to see if you'd print it.

That's the kind we like—short and to the point.

● *Over my signature was a letter in your column I'd never seen before, in the November issue of MI. I mailed you a letter but not that one. It should have been obvious, as the text of the letter referred to "here in Canada" and I live in Cleveland. What explanation do you have?*

J. Balderson
Cleveland, Ohio

Somebody goofed. The letter that was printed over your name was from Raymond J. Connors, St. Johns, Newfoundland. Sorry on both counts.

● *I saw a Cad-equipped character here in Oklahoma City during the Hot Rod Meet who could sure have passed for a relative of yours.*

W. T. Basore
Oklahoma City, Okla.

There are no better-equipped cads in the country than my relatives.

● *I don't think you're the kind who goes in for practical jokes—anyway, not this kind. I was driving home from work not long ago and happened to look in my rear view mirror and saw a goat sitting on my back seat, staring at me. No, I didn't panic. I drew the car over to the side and got the animal out. Some of my "buddies" pulled this on me but it could have proved very dangerous. I wish you'd write that you think so too, so that I could show it to them.*

Steve Wiley
Gary, Ind.

It certainly is dangerous. Foam rubber upholstery is one of the worst things a goat can eat.

● *I have a 1925 Franklin in good condition I wish to dispose of.*

George Bishop
Patchogue, L. I., N. Y.

I don't blame you.

● *I read that a dog belonging to a "Tom McCahill" won a field trail near here recently. Was this your dog, and if so, were you there?*

Ken Swanson
Minneapolis, Minn.

My dog, Boji, won a trial in Minnesota early in September; also one in North Dakota and another in Wisconsin. No, I wasn't there. I had to stay home to make enough loot to keep him on the road and pay his entry fees.

In the mail I received two one-pound notes (worth roughly four bucks) from Lindsay A. Roberts of Melbourne, Australia. What he wanted for the two pounds was a 1946 Packard Clipper Workshop Manual. You readers may have ten thousand of these you'd be willing to exchange for two pounds but just to avoid bursting mail bags, drop me a card if you have such a manual. I'll answer the first one, give you the two pounds and will mail the manual to our boy Down Under. This is not the start of a Lost And Found Department and we won't do it again.

—Tom McCahill

TORSION-AIRE

• WHAT IT IS • WHAT IT DOES • WHY IT IS BEST FOR YOU

Last year Chrysler Corporation proved that America was ready for something new in the way of ride and handling. And Torsion-Aire has given people just what they wanted!

Torsion-Aire is Chrysler Corporation's name for its rubber-isolated, ball-joint, anti-dip, torsion bar system of suspension. And it's unique among American cars. Its design comes from a fresh start, a clean drawing board. It is based on the belief that piecemeal modifications—and design compromises to accommodate optional suspension elements—are no match for a fully integrated, balanced system designed as a *whole*, with the *whole* car in mind.

As a result, it's *the most advanced suspension system yet developed*. No other gives you *all* these important advantages:

• Torsion-Aire is built right into the car. It's not "added on" or "extra". The Torsion-Aire system of suspension was designed for the car . . . and the car was designed for it.

• Torsion-Aire is a complete system. It is designed "in depth" to eliminate your three biggest handling problems. No more starting squat. No more sway on turns. No more braking nose-dive.

• Torsion-Aire is standard equipment on *all Chrysler Corporation Cars*—and at no extra cost. Suspension isn't an accessory you can take or do without. It's as basic to the car as wheels.

• Torsion-Aire is a proven system. Unlike untried systems, Torsion-Aire has been proved by billions of passenger car miles—by more than a million satisfied owners.

Want more proof of Torsion-Aire superiority? Take the Torsion-Aire road test. You don't have to seek out special conditions. With a bump in almost any block—and a corner at the end of it—you can prove this new kind of ride to yourself in the first quarter mile!

CHRYSLER CORPORATION ➤ THE *FORWARD* LOOK

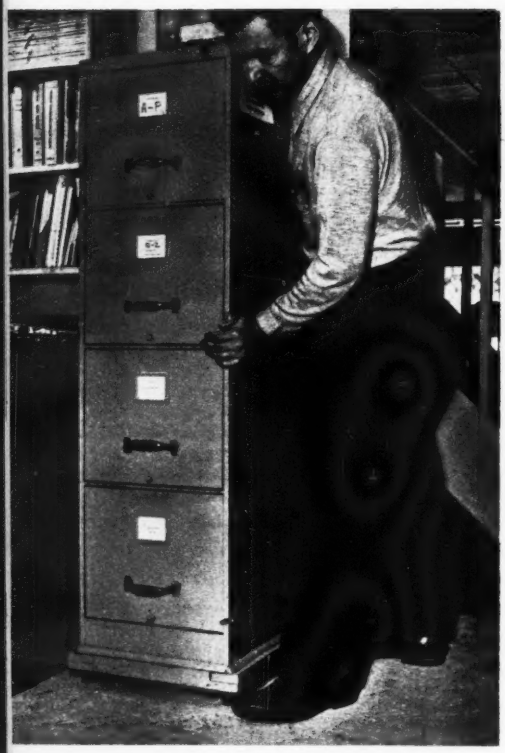
PLYMOUTH • DODGE • DESOTO • CHRYSLER • IMPERIAL

SPECIAL SERVICE SECTION

ALL ABOUT CASTERS

Why lug heavy loads around the home or shop when you can roll them on casters?

By Fred W. Myers



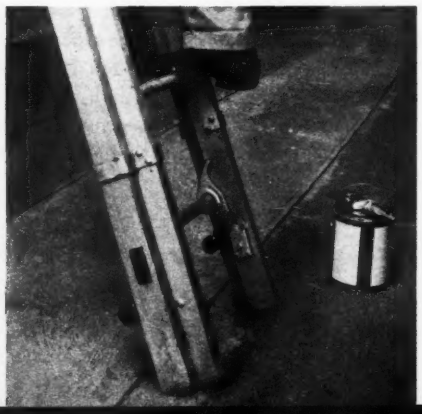
SINCE man first shaped a crude wheel from a section of a log, there has been a steady improvement in making things easy to move. Today it would be difficult to imagine a world without the benefit of wheels. Countless things that make life pleasant would just not exist.

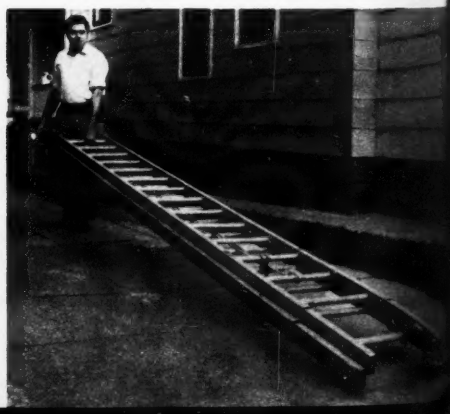
History does not tell us who or how the caster was invented, but since that time millions have been used—unconsciously in our daily lives. We are literally wheeled in and out of this world on casters (via crib and casket dolly) and rely on casters in many ways during the years between. Shop trucks, vacuum cleaners, tea carts, pianos, office chairs and hundreds of other items are all equipped with casters to make them practical for use.

A caster consists of a wheel mounted in a swivel or rigid frame and is used to move an object in a horizontal direction. Swivel casters revolve 360° and permit movement in any direction. Most household casters are of the swivel type. Rigid casters serve as a frame for a wheel and permit movement forward or backward; they are most often used in

HEAVY FILING CABINET is easily moved when fitted with a caster-equipped dolly.

PAIR OF PLATE CASTERS mounted six inches from the bottom of a heavy ladder are out of the way when the ladder is upright, yet make it simple for one man to move it about.

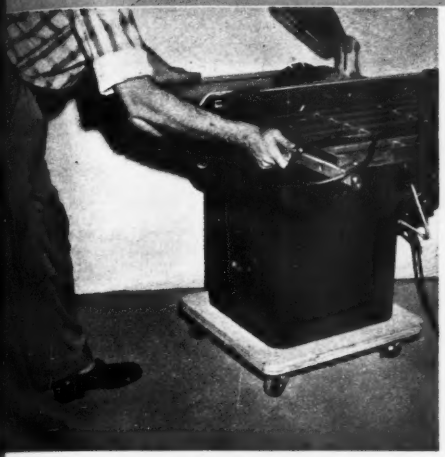


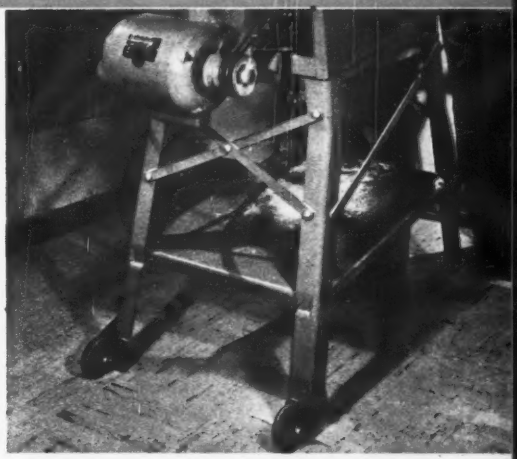


LIGHT-DUTY WOOD FURNITURE GRIP NECK STEM—PLAIN BEARING

LIGHT-DUTY WOOD FURNITURE GRIP NECK STEM—SINGLE BALL BEARING

WOOD OFFICE CHAIR GRIP NECK STEM DOUBLE BALL BEARING

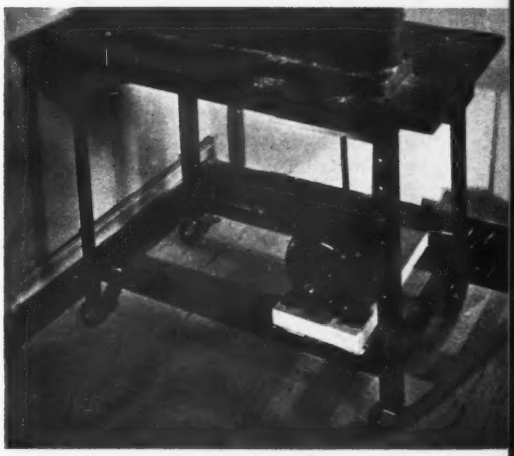


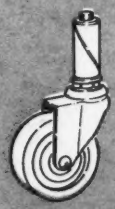


BENCH SAW, above, is mounted on a dolly equipped with four swivel casters, can be moved around shop.

BENCH WHEELS (above, right) contact floor when the table is tilted, allow back and forth movement.

ANGLE IRON LEGS of band saw table at right are provided with four casters to give it mobility.

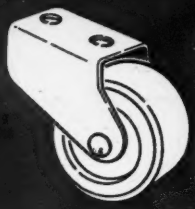


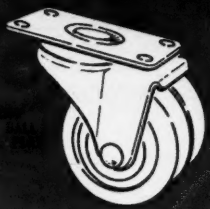


TUBULAR EQUIPMENT FULL GRIP RUBBER EXPANSION SOCKET—DOUBLE BALL BEARING

RIGID PLATE STRETCHER CASTER

STRETCHER CASTER DOUBLE BALL BEARING SWIVEL





3-INCH RUBBER CASTER WHEELS and some scrap lumber make a versatile hand truck.

DOLLY for moving heavy loads is made by attaching four casters to a plywood board.

conjunction with swivel casters on such things as shop trucks and dollies.

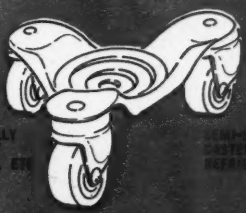
The two basic types of casters, stem and plate, both function in a like manner. The stem or plate remains in a fixed position while the lower parts, horn and wheel, revolve. Swivel action is achieved by having the wheel off center from the plate. The addition of ball bearings further increases ease of action. Casters are generally priced according to the complexity of the swiveling mechanism and the kind and diameter of wheel. Plain bearing casters are less expensive since they operate without the aid of ball bearings. They should, incidentally, be used only on very lightweight and infrequently moved furniture.

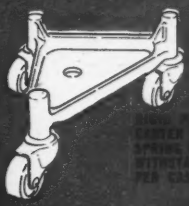
Casters with a single row of ball bearings are in the second category. This type is used on tea wagons, cribs

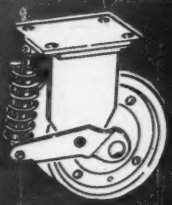
SPRING CASTER, above, enables a sagging garage door to ride clear of the pavement and takes strain off the hinges and frame.

CLOTHES HAMPER (above, right) has a set of 1-inch casters permanently attached so clothes can be wheeled to washing machine.

DOLLY CASTERS temporarily installed under legs of heavy furniture make it easy to move such pieces when house cleaning.







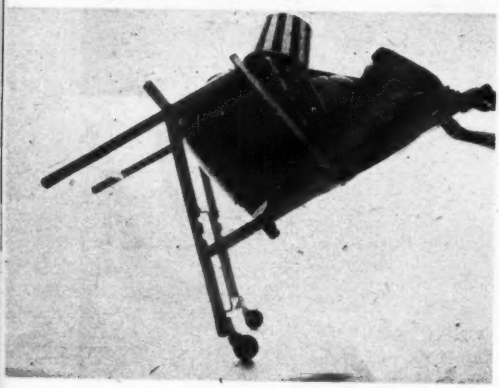
THREADED STEM DOUBLE BALL BEARING PIPE STEM THREAD

CREEPER CASTER PIVOT BEARING STEM

CREEPER CASTER PIVOT BEARING PLATE

THREADED STEM permits this caster to be adjusted after installation so that uneven furniture or equipment may be levelled off.

HEAVY TV SET which needs servicing or cleaning is easily handled when placed on a dolly you can make in less than an hour.



FOLDING CHAIR with casters added serves to carry gear from car to picnic grounds.

JUNIOR'S TOY CHEST is put on wheels to save wear and tear on the rugs and floors.

METAL OFFICE CHAIR WITH HOODED HORN DOUBLE BALL BEARING

LIGHT-DUTY METAL FURNITURE BALL BEARING SWIVEL STEM WITH SPRING CLIP SOCKET

ANGLE IRON CASTER WITH BALL BEARING SWIVEL

STEM CASTER
BEARING

PIANO CASTER
PIVOT BEARING STEM

WOOD FURNITURE CASTER
DOUBLE BALL BEARING
SWIVEL WITH LEG
FERRULE SOCKET

and other lightweight furniture where easy swiveling can be achieved.

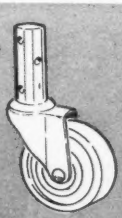
The better quality casters are almost always of the double ball bearing type. Here, two separate raceways of ball bearings make swiveling a good deal easier. Office chairs are usually equipped with double ball bearing casters. Beds, pianos and other medium and heavyweight or frequently moved furniture should be equipped with this superior type. Both plate and stem styles are available with plain, single and double ball bearing raceways; but substantially [*Continued on page* 149]

TRASH CAN with casters attached to underside simplifies cleaning up workshop.

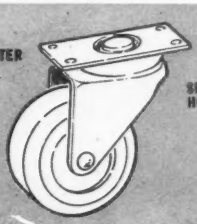
WOOD FRAMING is fitted into the bottom of a trash can to take four plate casters.

FOUR CLEATS can be secured to the household dolly to keep a garbage can in place.

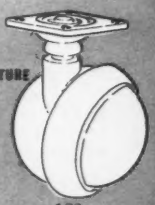
OCTAGONAL STEM CASTER
DOUBLE BALL BEARING
SWIVEL FOR USE WITH
ANGLE IRON



HOME FURNITURE CASTER
SINGLE BALL BEARING
SWIVEL PLATE



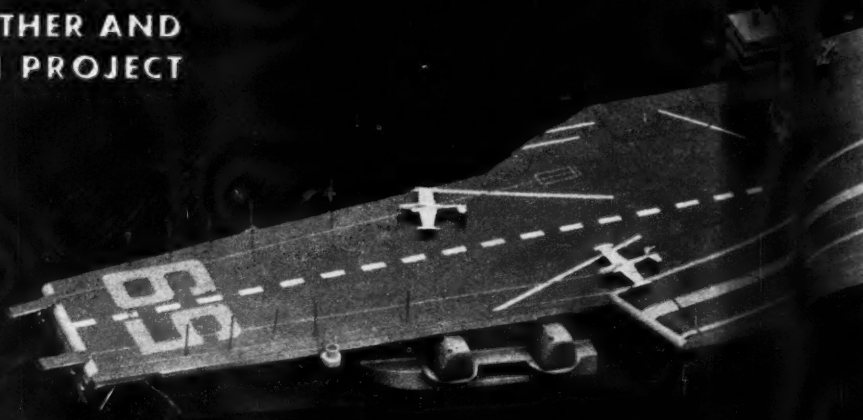
SHEPHERD CASTER FOR
HOME & OFFICE FURNITURE



Build this Model of the

By Walter Musciano

A FATHER AND SON PROJECT

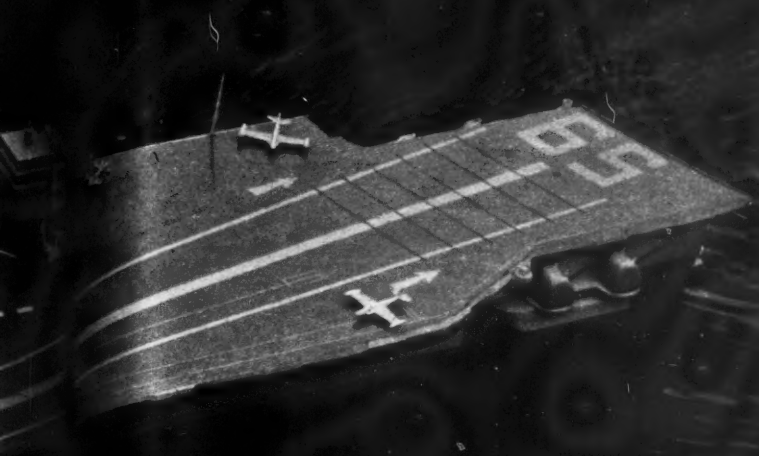


THE design of this [illegible] powered replica of [illegible] famous aircraft carrier [illegible] Forrestal has been kept [illegible] simple as possible so [illegible] anyone who can follow [illegible] structions will be able [illegible] complete the model with [illegible] difficulty. The model is [illegible] 40 inches long with a [illegible] deck width of ten inches. [illegible] dimensions are generally [illegible] scale, one inch equalling [illegible] feet.

An electric motor [illegible]

AERIAL VIEW of real USS [illegible] restal (left) shows integrity of modeled reproduction (above). Official U. S. Navy photograph

USS FORRESTAL

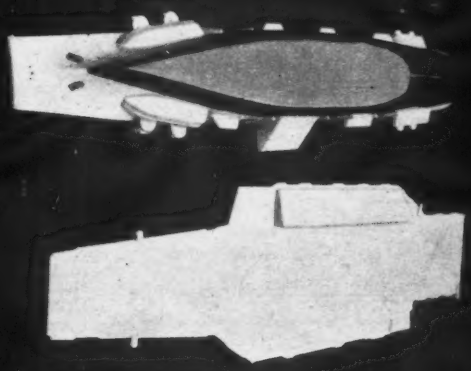


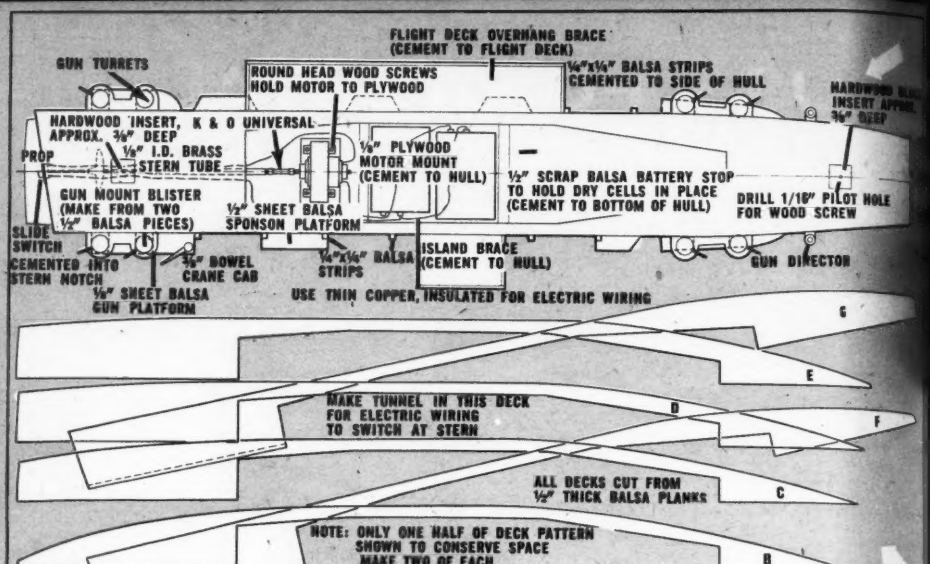
the model by means of a single [illegible]-inch-diameter Sterling nylon propeller.

The model's hull has not been drawn to exact scale for two reasons: first, the exact dimensions are still classified information and cannot be made public. Second, if the hull were constructed to scale the displacement would be so great that many pounds of lead ballast would be required to make it float at the regulation water line and to provide the necessary stability to prevent its capsizing. However, the shallow draft in no way affects the over-all appearance of the model.

The hull is of ample size to

TOP AND BOTTOM views of the hull before the decking and superstructure are been installed

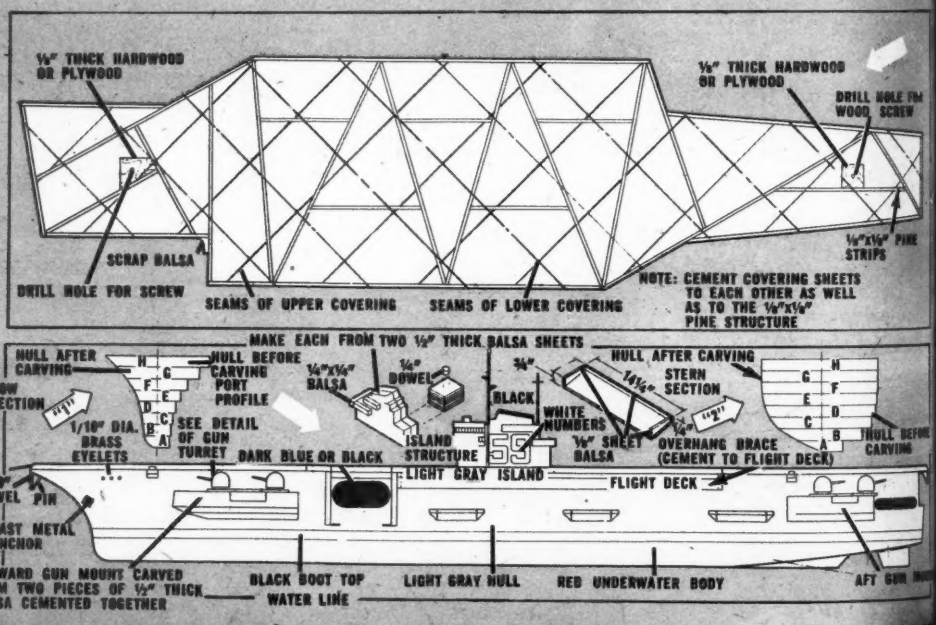


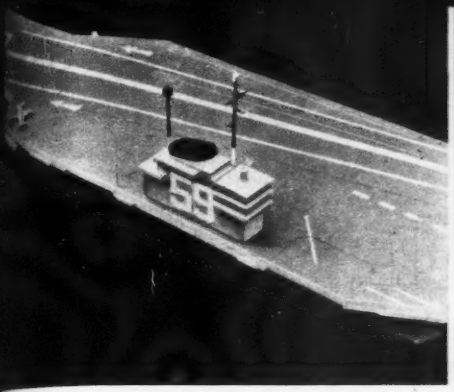


accommodate the propulsion motor and batteries as well as a single-channel radio control receiver with batteries, if desired.

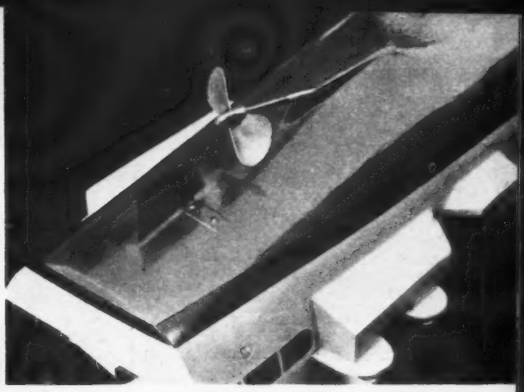
Before starting construction study the plans carefully. Notice particularly that the two sides of the ship are not alike insofar as platforms, braces, etc., are concerned; for this reason both sides are shown in the drawings. The hull itself is, of course, symmetrical.

Begin with the hull. For this we have





FLIGHT DECK is made of ⅛-inch balsa sheets; laminate these by gluing together.



PROPELLER SHAFT must be carefully aligned with motor to provide best thrust.

used a "bread-and-butter" or laminated wood construction which reduces carving to a minimum and eliminates the task of extensive hollowing.

Trace the outline of the hull patterns on ½-inch balsa planks. Mark the wood with a sharp, soft pencil or ballpoint pen. Note that only half the hull has been diagrammed to avoid duplication and save space for more important details.

After tracing the various pieces on the wood, cut the hull layers to shape with a coping or jig saw. Cut out the inside of the hull as well as the external outline on all pieces except piece A. This piece, since it forms the hull bottom, remains solid. However, the interior outline should be marked on piece A for purposes of alignment.

When all hull layers have been cut to size they are ready to be cemented together. Begin by cementing layer C on layer B using the center cutout as a guide. Continue until all layers are cemented together except bottom piece A. When finished, place heavy weights atop the assembly to press the layers together while the cement dries overnight. The following day, after trimming and sanding smooth the interior of the hull, add bottom piece A.

Hull sections 1 and 2 illustrate how the hull is shaped. Note that the sides form a series of steps. The only carving required is the slicing off of the jutting triangles. We used an X-acto No. 26 carving blade, but any very sharp knife will do the job.

Use very fine sandpaper to smooth the hull and take care to shape it as the plan's bow and stern views illustrate.

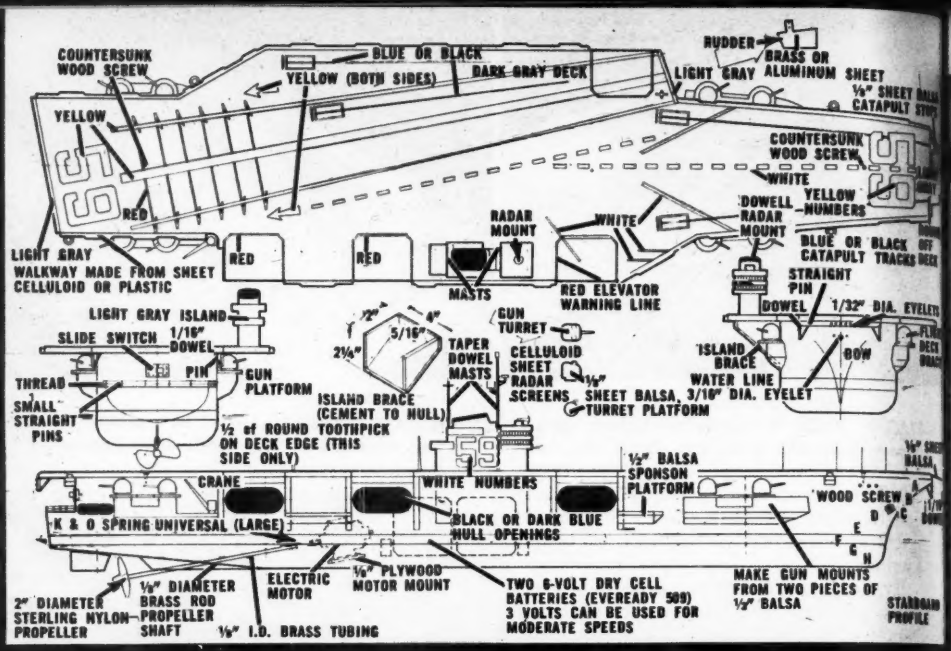
In order to finish balsa wood it is necessary to seal the pores and grain thoroughly before painting; Testors or Aero Gloss is recommended. Brush two successive coats on the hull's interior

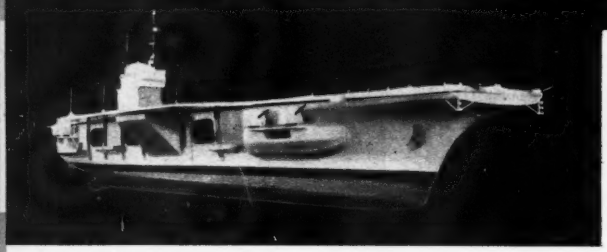
TWO SIX-VOLT BATTERIES are required to drive the tiny motor mounted in the hull.

and exterior, then let dry thoroughly before sanding.

You are ready now to install the shaft and stern tube. Mark off the points where the shaft pierces the hull. Using an awl or ice pick, probe the balsa from both sides along the shaft line as far in as possible.

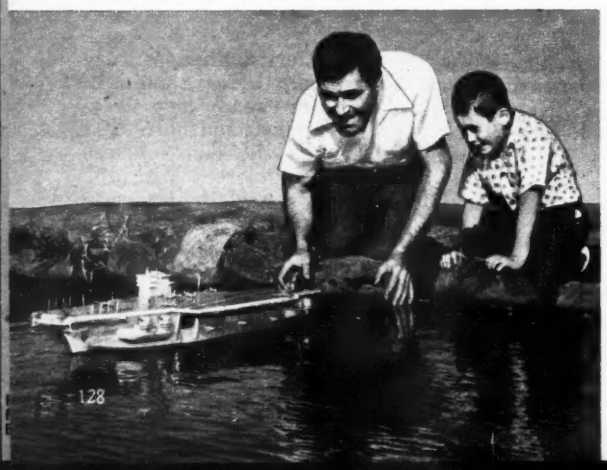
Drill out the remaining wood until the hole is slightly smaller than the brass stern





FULL-SCALE PLANS
will greatly simplify construction. Send 50 cents to Mechanix Illustrated Plans Service, Fawcett Bldg., Greenwich, Conn. Please specify Plan Number M-215, USS Forrestal, with your remittance.

LIKE FATHER, LIKE SON—or maybe it's the other way around! Anyway, when a fella can't "go down to the sea in ships" himself, he can take his own USS Forrestal to the nearest pond and sail to Anywhere.



tube. Cut the stern tube to length with a hack saw and bevel as shown. The bevel is needed so that the model will sit upright for exhibition when the propeller and shaft are removed.

Gently force the stern tube into the hull by tapping with a small hammer. Then apply several coats of cement around that part of the tube inside the hull.

The skeg is made in three pieces with the two face pieces cut to fit the stern

[*Continued on page* 160]

FRESH PAINT TIPS

Donaldson Co., Inc., 2520 Larpenter St., St. Paul 8, Minn.

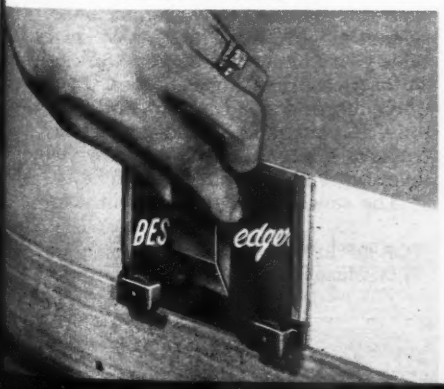
BRUSH BATH keeps brushes soft during a lay-up period; gallon can with air-tight top prevents evaporation of the solvent.

Martin-Senour Co., 2500 S. Senour Ave., Chicago

COLOROBOT now being used by some dealers can blend any of more than 7500 colors, depending on a customer's choice.

EDGING TOOL makes it possible for anyone to produce sharp, clean edges around ceilings, windows, doors and baseboards.

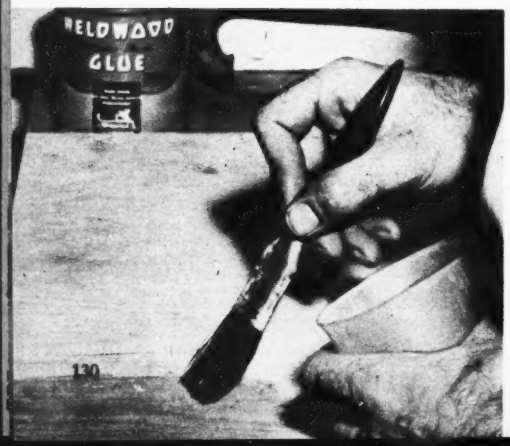
Emerson House, Box 370, Downers Grove, Ill.



HOUSEHOLD MIXER blends wallpaper paste to smooth consistency; for paint, use extra beater, line bowl with aluminum foil.

Build It...

Heavy Duty Workbench



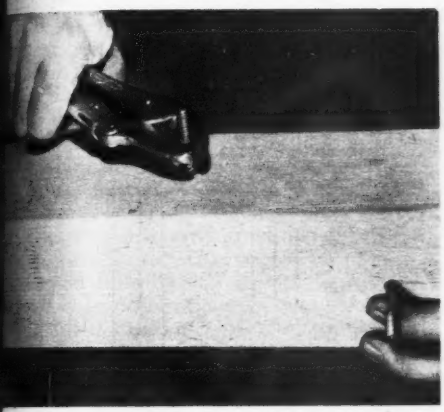
THE workbench is the heart of your workshop. Build a good one and it will last as long as your house. Here's a heavy duty job that will give you years of service as you work on it for pleasure or house chores. If you haven't got a good bench, build this one. If you have an old one on the rickety side, you'll wonder how you ever were able to put up with it.

The sandwiched top of ¼ in. tem-

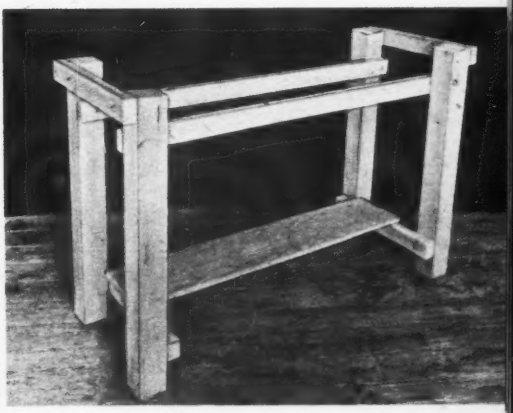
TOP OF BENCH is made by gluing two ¼ in. Masonite panels to ¾ in. plywood.

USE C-CLAMPS at 12-inch intervals to apply pressure while the glue dries.

A SHARP PLANE can be used to trim edges of the top after glue has dried.



A VISE-GRIP PLIER is the ideal tool to insert the hanger bolts into the four legs.



FRAMEWORK of the completed bench. Use four flathead screws to attach shelf.

pered Masonite and ¾ in. fir plywood is inexpensive and will take plenty of punishment. The lumber for the framework needs little fabrication since stock sizes are used. Your lumber yard can probably supply the wood cut to size. The 4x4 in. legs joined to 2x3 in. cross-pieces with ⅜x4 in. hanger bolts constitute the framework. The plywood stretcher across the bottom is set toward the rear to allow for foot room. Two full depth drawers and a tool rack complete the bench.

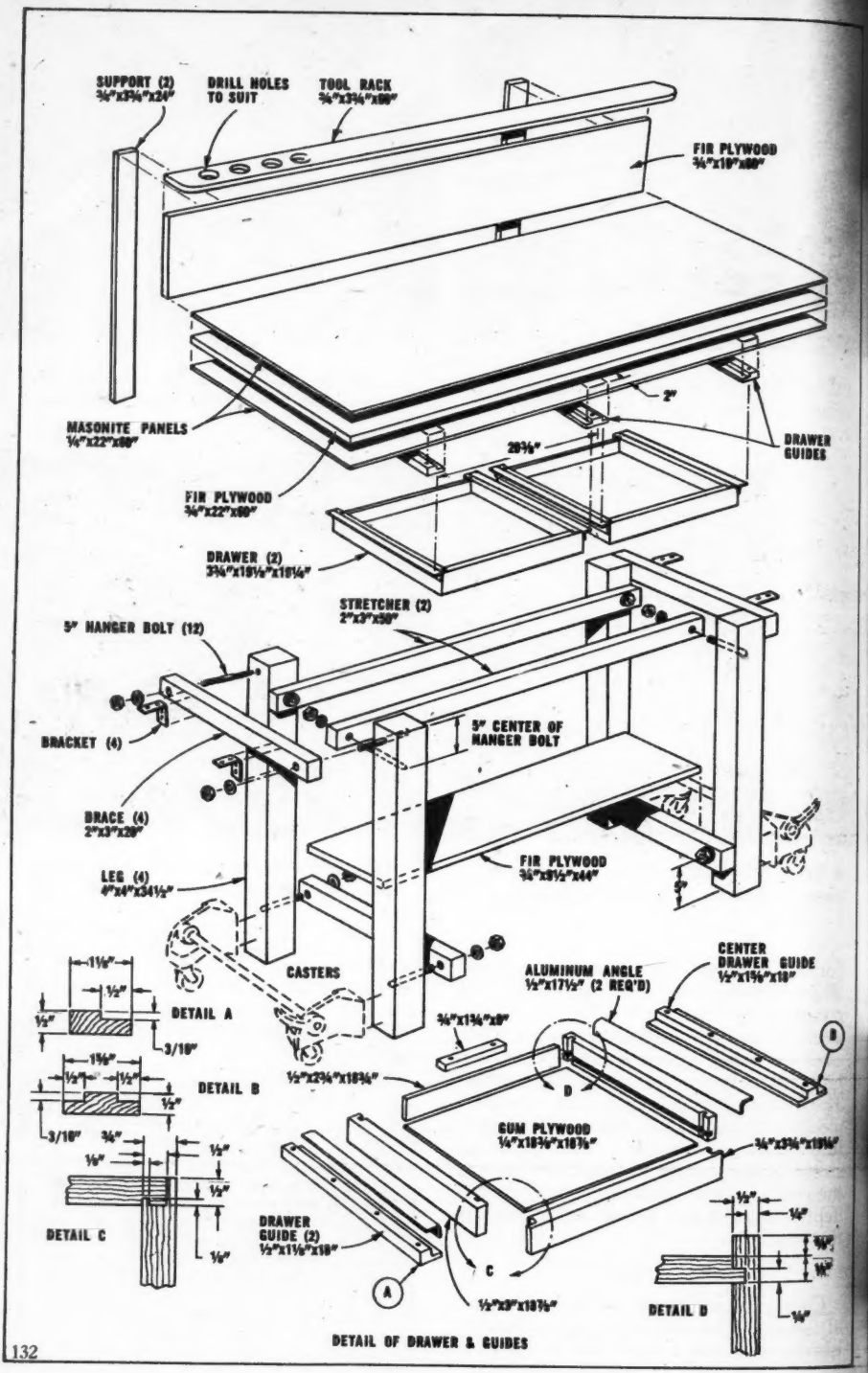
The Top

Construction starts with lamination of the top. Cut the plywood to the finished size, 22x60 inches. The two pieces of Masonite are cut slightly larger all around to afford leeway for gluing and planing. The excess will be trimmed off, flush to the plywood after lamination.

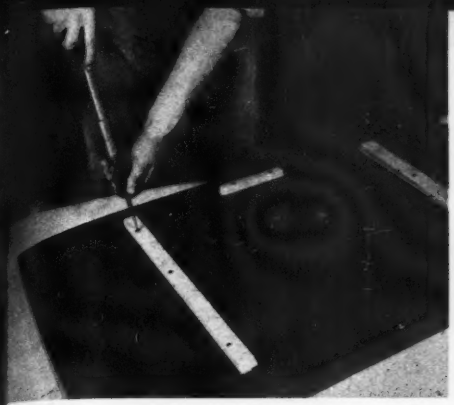
Use a good grade of glue and follow

KIT AVAILABLE

As a special service to MI readers, this bench is available in knock-down form. Kit includes all lumber, pre-drilled and dadoed, hardware, and laminated 1¼-in. top. To get your bench, send $35 (shipping charges collect) to Mica-Wood Products, 735 E. 9th St., New York 9, N. Y. Ask for Workbench Kit No. 11. The casters are available for $11.95 from Magna Power Tool Corp., Menlo Park, Calif.



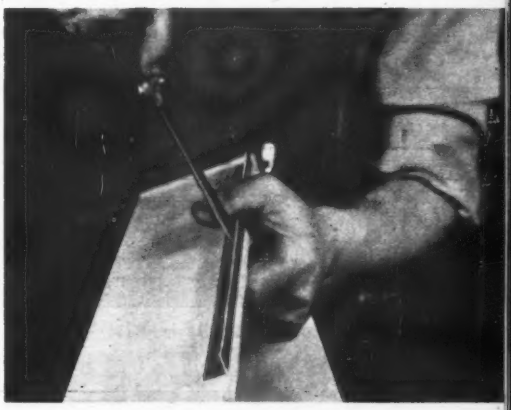
DETAIL OF DRAWER & GUIDES



ATTACHING DRAWER GUIDES to bottom of top. They are rabbeted for runners.

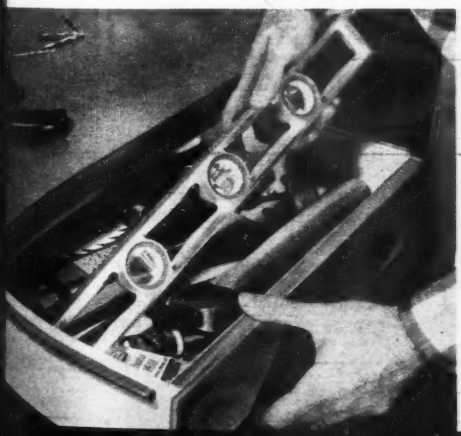
TWO REAR SUPPORTS lock top in place and serve to support the tool board.

the recommended procedure for mixing and applying. Coat one surface of the hardboard and the facing surface of the plywood. Center the plywood on the hardboard. Then apply glue to the other side of the plywood and the matching hardboard face. Align the second piece of Masonite to the plywood to complete the sandwich. The clamping pressure must be distributed evenly to insure a good job. This can be done by running 2x4's above and below the sandwich, about every 12 inches or so. Use C-clamps for pressure, tightening each gradually. When the glue has dried, remove the clamps and plane the hardboard flush to the wood. Sand the edges and break all sharp corners. For a natural finish apply [*Continued on page* 170]



ATTACHING ALUMINUM ANGLES to drawers; two drawers use four runners.

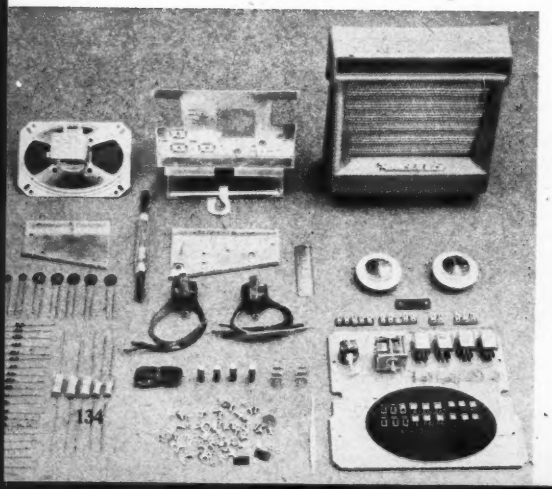
TWO ROOMY DRAWERS, each 18 in. wide, store bulky items. Oil the runners.



TO ATTACH CASTERS, use a piece of ⅛ in. hardboard as a shim on floor.

TRANSISTOR RADIO

By R. J. Capotosto



EVEN if you're a novice, you can easily assemble your own six-transistor portable radio from a kit which is complete right down to an attractive plastic case. The Heathkit Model XR-1 is sold with full-scale wiring diagrams and a step-by-step manual which makes the job foolproof.

Powered by six inexpensive flashlight cells with a life up to 1000 hours, the XR-1 is a superheterodyne receiver for the stand-

KIT comes complete with all parts, can be assembled easily by amateur.

ard broadcast band. It provides excellent tone and volume and is equal to a set costing much more than the kit, which costs $35 including a plastic case. For $40 you can get it with a leather case.

Successful assembly does not require the use of specialized equipment. Only basic tools are required. A good electric soldering iron is a must; the preferred size would be a 100-watt iron with a small tip. Long-nose pliers and a pair of cutting pliers are also recommended. A few assorted screw drivers complete the needs.

The first step is to mount the components on the chassis. The six-transistor sockets are oriented according to a drawing and inserted in rectangular holes. Snap rings hold them in place. The audio driver and the output transformers are mounted next. For ease of wiring, the leads of the transformers should be cut to the proper length and stripped as indicated in the instructions.

Next the oscillator coil and three I.F. transformers are inserted into the proper cutouts and held in place with the spring clips provided. These four components each have one terminal marked with a color and it is important to locate their leads properly. The preliminary mounting is completed when the three terminal strips are added.

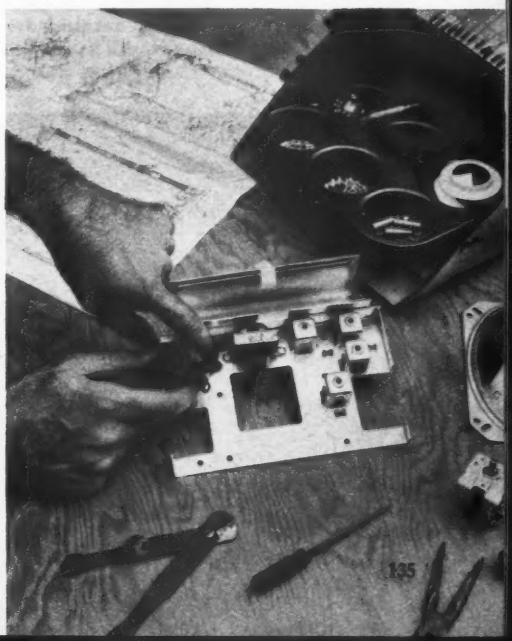
Before wiring is started, location and position of all components should be

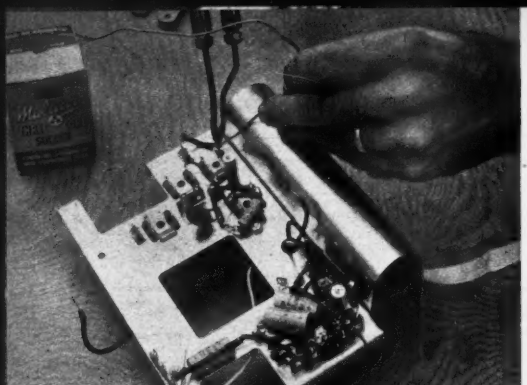
FULL-SIZE DRAWING is used to cut the transformer leads to the correct length.

PARTS LIST

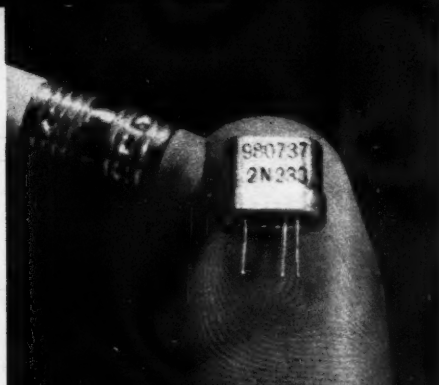
2	.005 µfd 10% disc capacitor
1	.01 µfd 10% disc capacitor
5	.05 µfd disc capacitor
2	10 µfd electrolytic capacitor
2	50 µfd electrolytic capacitor
1	100 µfd electrolytic capacitor
1	Variable capacitor, 2 gang
1	Antenna coil
1	Oscillator coil
1	Driver transformer, audio
1	Output transformer, audio
2	IF transformer
1	IF transformer
1	Crystal diode
1	2N252 transistor
1	2N253 transistor
1	2N254 transistor
1	2N238 transistor
2	2N185 transistor
1	470Ω 1/2 watt resistor
4	1 KΩ 1/2 watt resistor
1	2.7 KΩ 1/2 watt resistor
1	3.3 KΩ 1/2 watt resistor
3	15 KΩ 1/2 watt resistor
1	47 KΩ 1/2 watt resistor
1	27 KΩ 1/2 watt resistor
2	10Ω 1/2 watt resistor
1	2.2 KΩ 1/2 watt resistor
1	220Ω 1/2 watt resistor
2	8.2 KΩ 1/2 watt resistor
1	1.8 KΩ 1/2 watt resistor
1	33Ω 1/2 watt resistor
1	2.5 KΩ control/switch

COMPONENTS are attached to chassis. The large diagram shows where each part goes.





SOLDERING GUN helps in getting into the tight spots. Rosin core solder is a must.

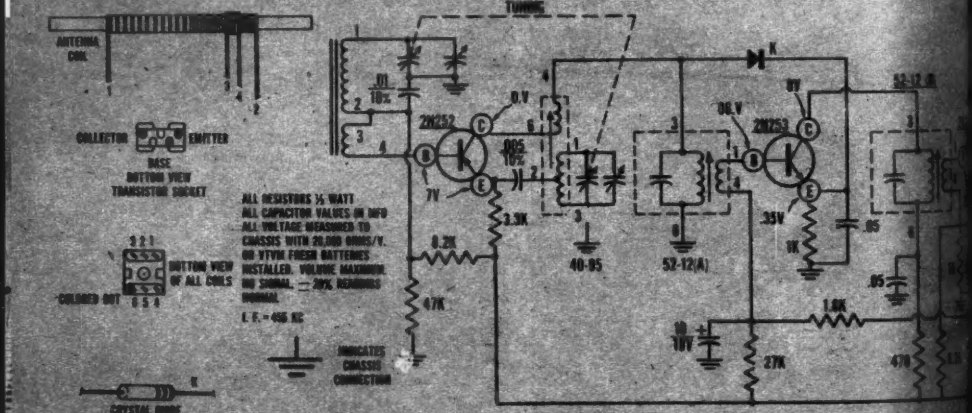


SIX TRANSISTORS are used in the radio, each doing the work of a much larger tube.

checked for possible errors or omissions. With this done, wiring begins with the audio output stage and continues through the audio driver stage and the I.F. amplifiers. All resistor and capacitor leads are cut to predetermined sizes which are given in the instruction manual. These sizes should be adhered to closely as they have been carefully computed for efficiency and compactness. Unless a lead is very short and the danger of a short is non-existent, sleeving should be used. An ample supply is furnished with the kit to provide adequate insulation. Stripping of insulation should be done carefully so that the wire is not cut. A wire stripper will make the job easy. A stripper usually has an adjustable cam to allow for various wire thicknesses; properly set, it will remove the insulation without marring the wire and you won't be apt to touch the bared wire with your fingers. This eliminates the possibility of getting grime and skin oils on the wire, which must be clean in order to make a good solder joint.

Proper soldering technique is very important and it would be wise for the novice to practice for half an hour with pieces of wire and a few lugs. The tip of the iron must be cleaned and tinned. Use steel wool or a fine file to clean it and do the tinning by melting some solder on the tip and rubbing it with cloth until the iron is shiny.

A common mistake made by many



beginners is to apply the solder to the iron in order to melt it. Instead, the iron should be placed on the part to be soldered until the part is hot enough to melt the solder. Rosin core solder must be used in radio or electrical work. Acid core or paste fluxes will eventually corrode the joint, rendering the set inoperative. The work should be done as quickly as possible to prevent the components from overheating. This is especially true when soldering the crystal diode, since excessive heat will damage this part. It is advisable to grasp the lead with pliers between the diode and joint so that the pliers will absorb the heat.

To facilitate the wiring and prevent errors, the manual gives coded instructions for soldering. For instance, NS indicates that a connection should not be soldered at this point of the assembly. S2 would indicate that two leads must be soldered at this point. After each stage is wired, it should be checked with the pictorial drawing.

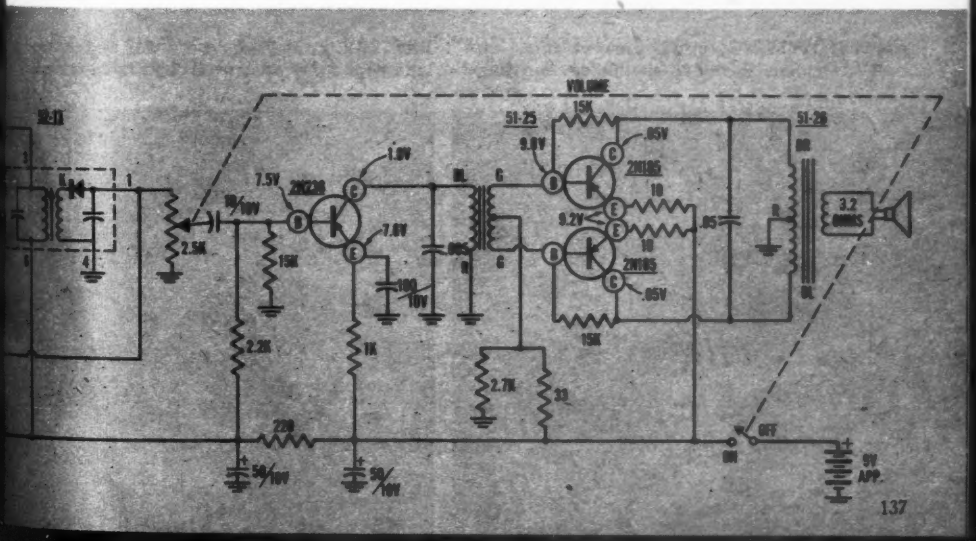
Final assembly and wiring consists of mounting and wiring the antenna coil, variable condenser, volume control, battery terminals and loudspeaker. Care must be taken when handling the antenna coil as the core is brittle and will break if dropped.

The transistors and batteries are then inserted and the chassis is installed in the cabinet. Pressing the volume control and tuning knobs into place completes the assembly.

To obtain maximum performance the set must be aligned. This consists of adjusting the I.F. amplifiers for maximum gain, the oscillator circuit so that the dial will indicate station frequencies properly and the signal and oscillator circuits for correct kilocycle separation at the low frequency end of the dial. A special tool is provided for this job and instructions appear in the manual.

Operation of the set, of course, is conventional. However, because the antenna coil tends to give directional results, the receiver should be rotated to provide maximum volume. No pilot light is provided to indicate when the receiver is turned on because such a light would consume about ten times the power required by the receiver. •

FLASHLIGHT CELLS supply power; they're easily removed by pulling on nylon strap.



CAR CARE "STOP KILLING YOUR CAR!"

By Frederick C. Russell
Member, Society of Automotive Engineers

DETROIT engineers have paced the floor nights trying to make their products proof against damage by owners and drivers, but every auto junkyard is stark evidence of the fact that the public is always able to cook up new ways of wrecking cars. Luckily a high percentage of taboos are coming to be known, and avoided, by experienced motorists. Some of these "dont's" may surprise you.

Many things we do to our cars do not seem to be especially damaging. One owner made it a rule to leave his car in the driveway whenever he came home from work instead of putting it in the garage. He told himself he probably would use the car later in the evening, but usually he didn't. After the 11 o'clock news he would start up the cold engine, drive 50 feet into the garage and let raw gasoline drain from the cylinders into the crankcase to dilute the oil. He had no idea that he was paving the way for an engine breakdown and a two-day delay on a trip to Florida in the late winter.

Before starting out he checked the oil level and of course found it right up to the "full" mark, not suspecting that the oil was loaded with gas. This burned off rapidly on the first leg of the trip and caught him with not enough oil when he was hitting it up on a Southern highway.

Most car damage comes from the simplest mistakes. I'm thinking of the fellow who kept filling the radiator each morning to make up for what he believed was a small leak in the cooling system. He was merely providing no room for expansion so that as the coolant heated up some of it went out the overflow pipe. That was the minor

WHEN PARKING, you'll prevent strain on steering gear if you keep the car moving.

BATTERY can discharge itself if the top isn't wiped dry after water has been added.

BRAKES should not be applied when car is going over rough ground; spring may break.

DON'T let fuel run too low; sediment can be drawn from tank, damaging fuel system.

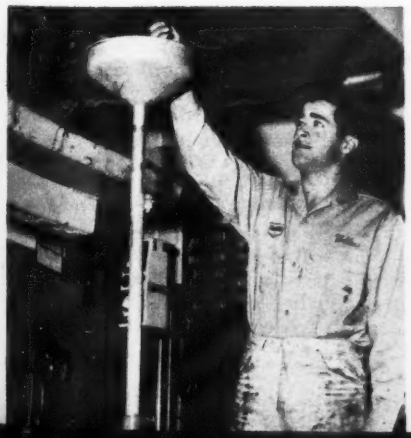
side of the story, however. What really threw him was the fact that the strength of the anti-freeze steadily lowered. Came a sudden cold snap and one of the cylinder heads cracked.

Adding water to the battery after putting it away for the night, weakens the solution and invites the AAA around in the morning to get the engine started. When a driver thinks the engine isn't running and touches the starter button, he is apt to chip a tooth from the flywheel ring gear. It's always taboo to crank more than a few seconds without a pause. Steady cranking is likely to damage the starting motor.

A sure-fire way to invite brake

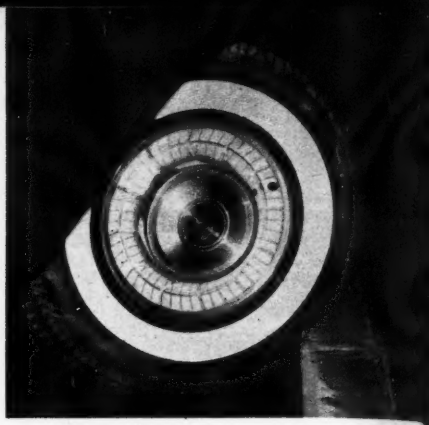
PLUG on master brake cylinder shouldn't be removed until all dirt is wiped away.

DRAIN OIL when the engine is hot so that the suspended sludge will be carried away.



RUN YOUR ENGINE when adding cold water to the radiator, allowing it to circulate.

CLEAN FILTER in fuel system periodically; do not allow grit or sand to collect.



CURB BUMPING when parking your car is a short cut to front-end alignment trouble.

FAN BELT wears bearings when too tight, won't work generator when it's too slack.

PLASTIC WINDOW in a convertible should be cleaned with damp cloth, not a dry one.

trouble is to jam on the brakes at low car speed. This may jam a brake cylinder piston. Another "don't" is holding down the brake pedal when going downgrade, even with light pressure. Steady application heats the drums, causing them to expand and bring on "fade"—a mighty close cousin to failure. Last summer many drivers discovered that they had inferior brake fluid which vaporized when the brakes overheated. This can cause complete brake failure.

Don't laugh off your habit of failing to release the hand brake. This, too, can bring on brake failure. If the hand brake operates through the two rear brake shoes any drag is likely to heat up the fluid.

Speaking of heating reminds me of the common mistake of removing the radiator cap when the engine has overheated. With a pressure cap, turn it part way so as to open the system to the overflow pipe and to release steam. Then the cap can be fully removed without risk of scalding. Don't put cold water into the system if the solution is low. If only a little water is needed, have the engine running while adding water slowly.

Murder of a good car often is done in easy stages, but here are two good ways to cripple a car. One of these is hitting a front wheel against the curb when parking at an angle. This often knocks the front end out of

line. It wouldn't be so bad if the owner merely had to pay for an alignment job but by the time he discovers the need for it he usually has lost a lot of tire tread. Costly, too, is applying the brakes while the car is banging into a chuck hole or a bad stretch of rough road. This sort of thing accounts for many a broken spring. If you can't slow down before hitting the rough spot, let the car roll through it in neutral.

I don't know why drivers do not get hep to it anyway, but fast driving over rough roads is an effective way to knock the front end out of line. If the rear tires show more wear on one side, it's evidence that the rear axle housing has been sprung. Blame that on speed, rough roads and overloading.

Abuse of the steering gear when equipped with power is a common occurrence. You can see it wholesale wherever drivers are enjoying the new ease in parking. They find it so effortless to swing the wheels it soon becomes a habit to put power steering into action when the car is stock still. Easy enough to park, but brother what a strain on the steering assembly!

There still exists the type of mechanic who recommends a heavy oil in the transmission to silence worn gears. Nuts to that!

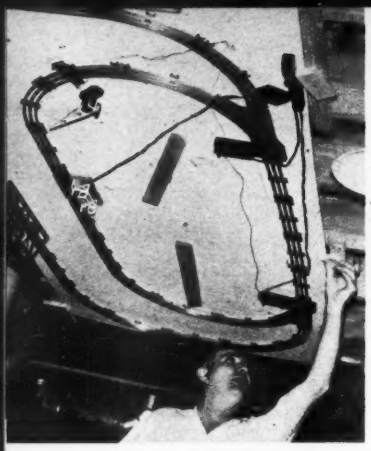
To help the car to longer life the smart owner tries to keep abreast of changes which Detroit engineers themselves find essential. Only a short while back owners were told not to change oil in automatic transmissions and torque converters until the car had traveled 25,000 miles. Why? Simply as a means of keeping parts cleaner.

It doesn't take much of a mistake to bring on a lot of expense. Such as scratching expensive windshields. This happens when you fail to turn off the wipers when stopping the motor at night. The windshield dries dirty and when the engine is started in the morning, [*Continued on page* 166]

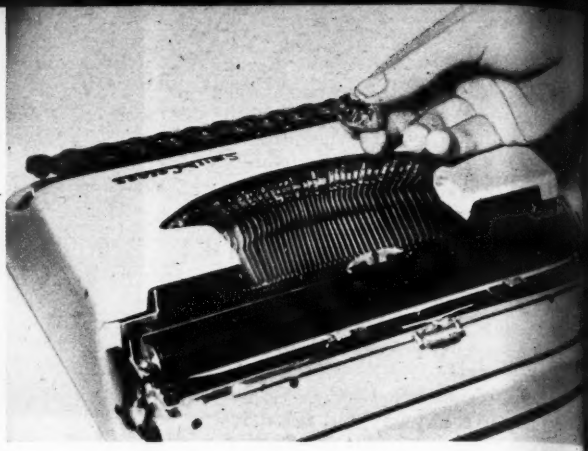
TIRES naturally build up added pressure when in use: don't bleed off this excess.

RELEASE parking brake before driving car. Heated brakes vaporize brake fluid.

SWITCH OFF wipers on parking or they may scratch dry and dirty windshield later.



ELECTRIC TRAIN TABLE always presents a storage problem. One solution is to secure it to cellar rafters with pivoting cleats.



MODELING CLAY can be used for cleaning typewriter type; it gets into depressions to remove ink, dirt and eraser particles.

HOME HINTS

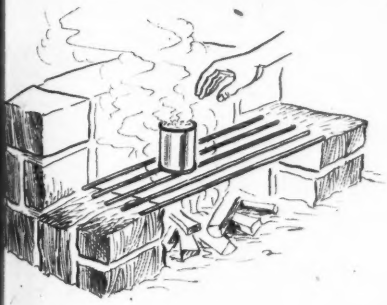
WANT TO KNOW how much oil is left in a 55-gallon drum? If it stands vertically, figure 2-⅞ inches depth for every five gallons. If it is horizontal, prepare a dip stick based on the measurements below.

INCHES	GALLONS
3-⅜	5
5-⅜	10
7-⅛	15
8-⅞	20
10-⅜	25
12	30
13-½	35
15-⅛	40
16-⅞	45
18-¾	50
21-½	55

FREDDIE FUMBLES

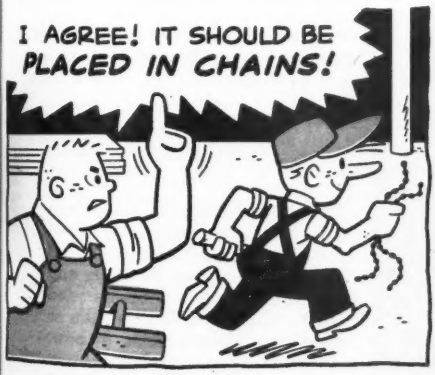
PASTE WAX spreads over the floor quickly, evenly and sparingly if placed inside a flour or sugar sack made of thin cloth.

AN OLD TOOTHBRUSH makes a good applicator for shoe polish. The bristles reach into all seams and crevices in the leather.

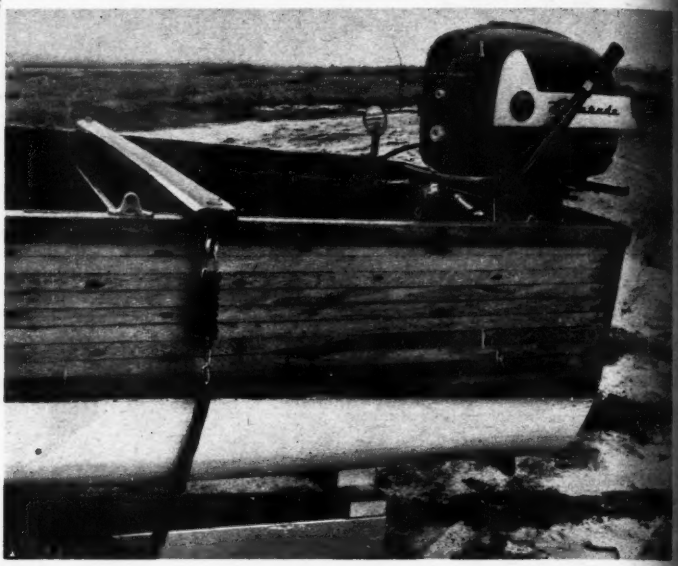


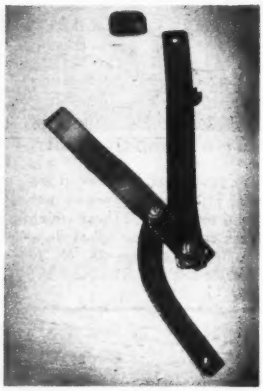
CANNED FOOD which is heated over an open flame at barbecues or picnics becomes too hot to touch with the bare hand. A good way to pick it up is to use a clamp-on opener.

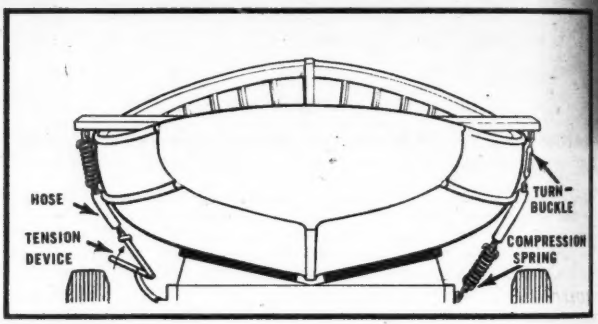
Send Freddie Fumbles your idea of a good short-cut, time-saver or safety device in your work, whether it be in the home, shop, office or farm. Each tip accepted will be paid for at the rate of $10. Naturally we cannot acknowledge or return the ones we cannot use. However all will be carefully read and evaluated. (Those which we can use in other departments of MI will be paid for at our regular rates.) Please send in your ideas on a post card only. Address to Freddie Fumbles, *Mechanix Illustrated*, 67 W. 44th St., New York 36, N. Y.



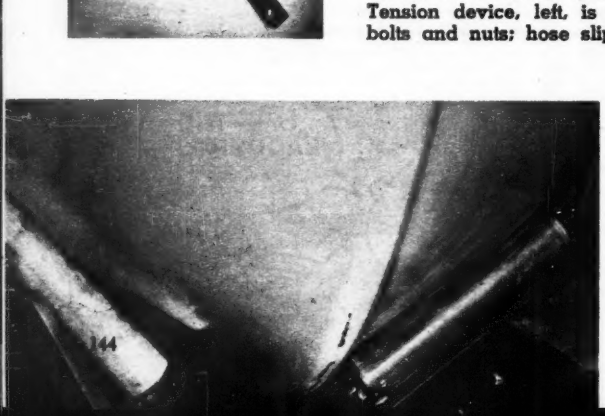
BOATING TIPS







TRAILER TIE-DOWN makes it possible to secure boat quickly. Tension device, left, is fashioned from flat steel, washers, bolts and nuts; hose slipped over short chain protects hull.



OLD WRINGER ROLLERS taken from washing machine are ideal for the home-built trailer. If mounted in swivel brackets and attached to rear of open-ended trailer, they enable one man to load boat he can raise at bow.

STARFLITE V-4

with Evinrude's mighty V-4 power and magic "Seal of Silence"

For starry-eyed dreamers . . . Starflite is a dream come true! Its very name suggests performance out of this world. Its low, sweeping V-shape of tomorrow hints of fun to come.

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Thrilling V-4 performance is also yours in the new Four-Fifty, at low, low cost. There's a glamorous new Lark with Starflite quiet! Power-packed new "35's" and "18's" with key switch starting! A sweet-trolling streamlined "10"! And 3 handy take-along motors! Catalog *free*—write Evinrude Motors, 4211 N. 27th Street, Milwaukee 16, Wisconsin.

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EVINRUDE ***quiet outboard motors***

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Pfc. Frank J. J. Kirchner, Jr.
Annapolis, Maryland
Graduate,
Annapolis High School

"I found only the Army would give me just the schooling I was looking for. Under its technical training program for high school graduates, there are so many different varieties of courses, there's one for everybody. I chose Supply Management, and the course was even better than I thought. You can pick your training, too."

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Graduate,
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THE ADJUTANT GENERAL MI-2-58
Department of the Army
Washington 25, D. C.
Attn: AGSN

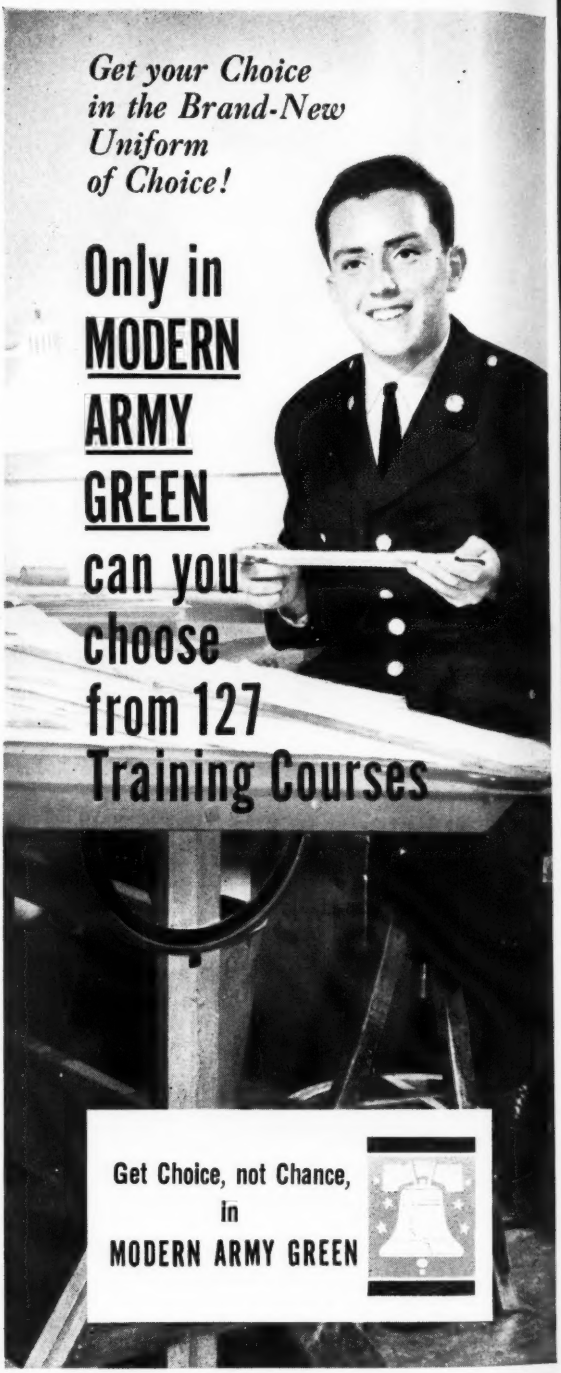
Please send me the free Army booklet telling how high school graduates can choose their technical training before enlistment in Modern Army Green.

Name .....

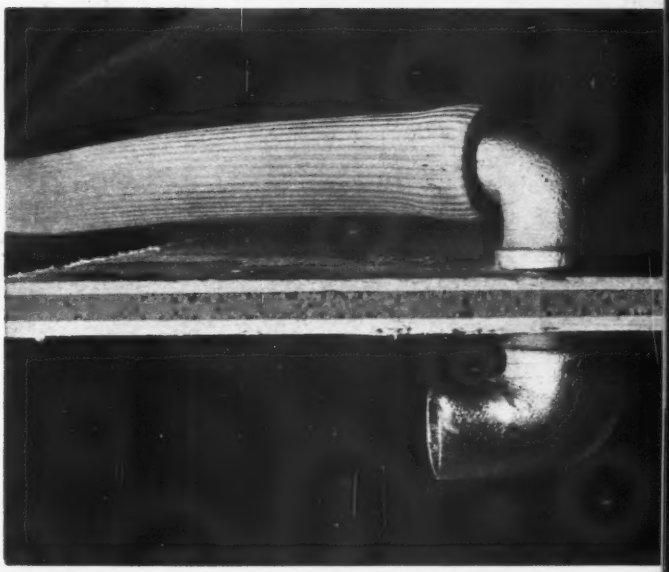
Address .....

City ..... **State** .....

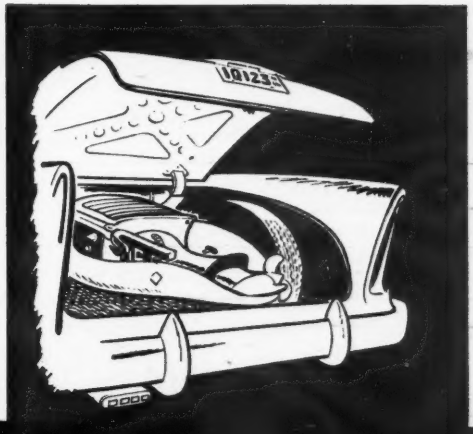
Date of Graduation .....



BOAT BAILER is made from a pair of brass elbows and a ⅜-inch close nipple. A cap is also provided for the upper elbow. Bottom elbow has two 3/16-inch holes and one ¼-inch hole to create suction (above, right). Section at right shows installation with ½-inch hose attached to draw water from the forward part of the hull. Unit works best at about 15 mph.



INNER TUBE, partially inflated, is an effective way to protect an outboard which is carried in the trunk of a car. It cushions the bounces.



BARNACLES won't adhere to a prop sanded clean and coated with Kasson waterproof grease.

THE SAW

This is the second of a series of articles on hand tools.

THE saws most commonly found in today's home workshop are the handsaws (crosscut and rip), the keyhole or compass saw, the coping saw, the back saw and the hack saw. The miter box deserves mention here too, since without it a handsaw could not be guided along the proper angle required to make a clean and accurate miter joint.

Specialists in their fields will turn to other saws that are prefixed by such definitive names as pruning, plasterer's, butcher's, metal cutting or jeweler's.

Many saws that were popular in the past have been or are being replaced by power tools. These include the buck, one- or two-man crosscut, flooring, stairbuilder's, ice-cutting and web or turning saws.

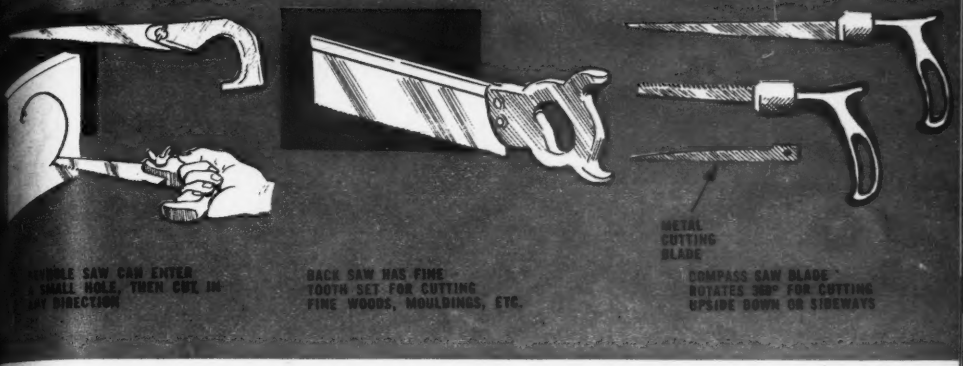
The handsaws may have either a straight, curved or skew back. Saws of quality are usually taper ground, being thinner at the back than at the toothed edge to prevent their binding when deep in a kerf.

A good saw will carry a numeral, generally stamped near the heel of the blade, to indicate the number of points per inch. This numeral is always one more than the number of teeth per inch. Handsaw blades may be anywhere from 20 to 28 inches long, a popular length being 26 inches.

Some carpenters prefer their finish crosscut saws to be of shorter length. Others may grind to a point the toe of an old saw for use in starting cuts in hard-to-reach places.

A good selection of handsaws for the average homeowner would include a seven- or eight-point crosscut for rough work, a 10-point for finish work and a five and one-half or six-point rip saw.

Keep your saw blades sharpened and free from rust. Ordinary care requires



that a saw blade be given a light coat of oil after every use. If neglected, a saw should be restored as nearly as possible to its original condition and then cared for properly. Given reasonable care, a saw of good quality should last a lifetime.

The crosscut saw is made to cut *across* the grain of the wood. Its teeth are sharpened and set so that they will cut the wood fibers on either side of the kerf and provide clearance for the blade to follow through. These teeth are set at alternating 60° angles, pitched forward about 15°, and beveled on alternate sides to about 65°.

The ripsaw is designed to cut *with* the grain. It has chisel-like teeth that saw through wood at the bottom rather than at the sides of the kerf. Its 60° teeth are not pitched forward as are those of the crosscut. The front edge of the teeth are not beveled but are filed straight across and their set is on the top half of the tip only.

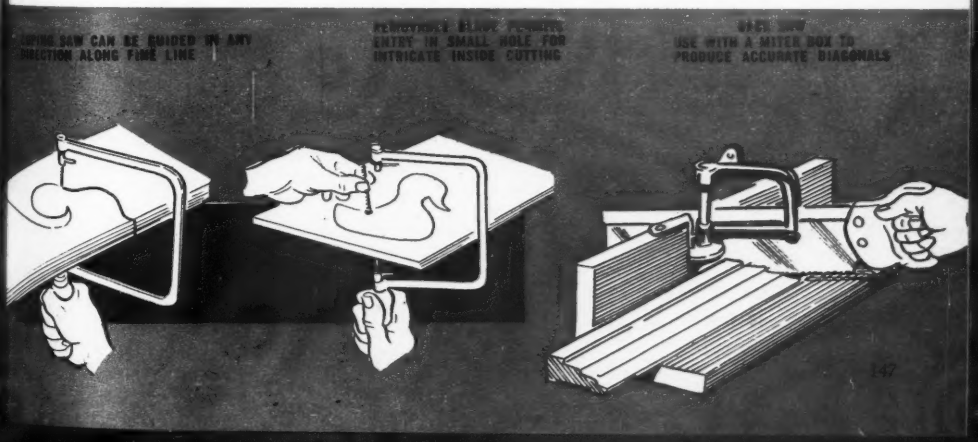
Many craftsmen prefer to send their saws out to be sharpened. However, the job can be done at home with the aid of a saw set and a slim, tapered, triangular file. The saw set is used to give each tooth a uniform set and the file is the tool that sharpens them. The file should have an extra-slim taper for ten-point or finer-toothed saws. A saw vise and file guide are additional tools that will make this job easier.

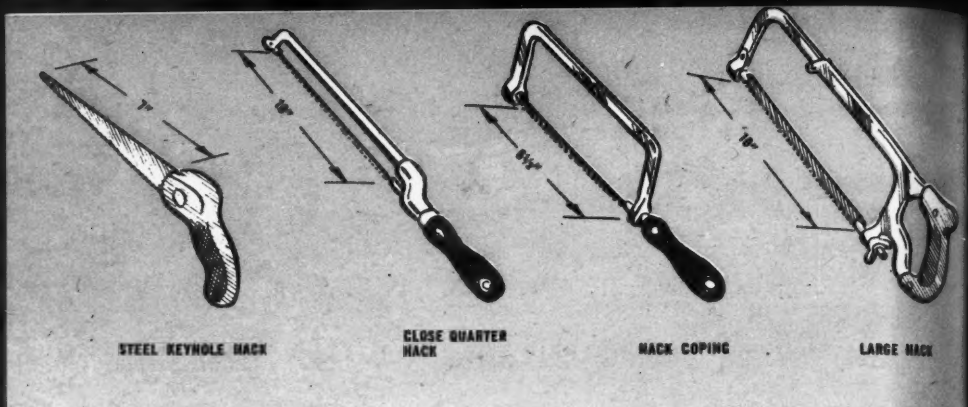
In use, the crosscut is held at about a 45° angle to the work, the ripsaw at about 60°. To start either saw, draw it backward along the work, keeping it perpendicular and steadied on the line.

The backsaw has fine 12- to 14-point teeth and a 12- to 16-inch-long blade that is stiffened by a thick back. It is used for fine, accurate crosscut work in joinery or cabinet making.

The dovetail saw is similar to the backsaw and is used for light, smooth sawing where a backsaw is not suitable.

A compass saw will rough-cut curved





or straight-sided holes. The blade tapers to a point and its teeth are sharpened in such a way that they can be used to either crosscut or rip. A keyhole saw is similar to a compass saw but will cut smaller holes.

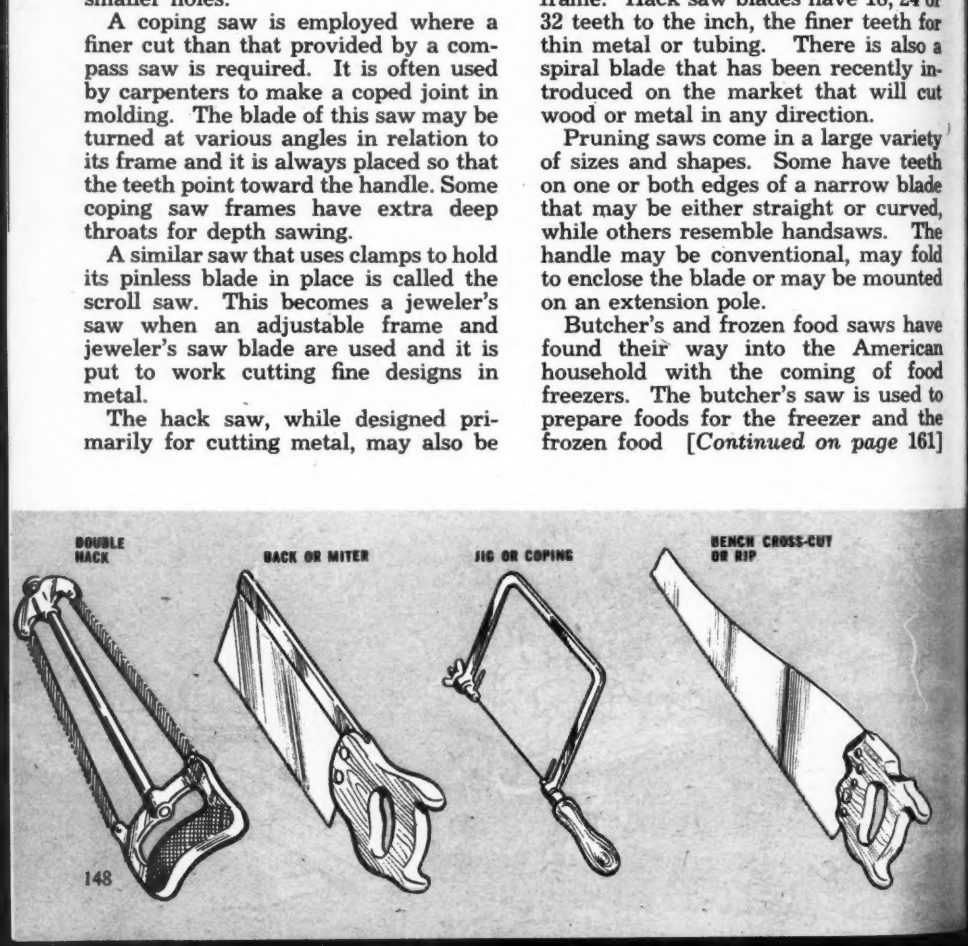
A coping saw is employed where a finer cut than that provided by a compass saw is required. It is often used by carpenters to make a coped joint in molding. The blade of this saw may be turned at various angles in relation to its frame and it is always placed so that the teeth point toward the handle. Some coping saw frames have extra deep throats for depth sawing.

A similar saw that uses clamps to hold its pinless blade in place is called the scroll saw. This becomes a jeweler's saw when an adjustable frame and jeweler's saw blade are used and it is put to work cutting fine designs in metal.

The hack saw, while designed primarily for cutting metal, may also be used to cut plastics and other hard composite materials. Its adjustable frame permits different length blades to be used which may be clamped to cut at any one of four angles in relation to the frame. Hack saw blades have 18, 24 or 32 teeth to the inch, the finer teeth for thin metal or tubing. There is also a spiral blade that has been recently introduced on the market that will cut wood or metal in any direction.

Pruning saws come in a large variety of sizes and shapes. Some have teeth on one or both edges of a narrow blade that may be either straight or curved, while others resemble handsaws. The handle may be conventional, may fold to enclose the blade or may be mounted on an extension pole.

Butcher's and frozen food saws have found their way into the American household with the coming of food freezers. The butcher's saw is used to prepare foods for the freezer and the frozen food [*Continued on page* 161]



All About Casters

[*Continued from page* 123]

easier operation and added years of service make the double ball bearing type worth their small additional cost.

Wheel diameters vary in furniture casters from approximately 1¼ inches up to five inches. Generally, the larger the wheel diameter the better the caster and its performance. However, a 1⅝-inch wheel in a double ball bearing caster will often out-perform even a three-inch wheel in a plain or single ball race style. A two-inch diameter caster of the double ball bearing type will nicely fill the general requirements for most household and home workshop applications.

Manufacturers sell both hard tread and cushion or soft tread wheel casters. Around the house, casters with hard tread wheels operate best on rugs and carpets. They are generally made of phenolic resin plastic compounds. These non-marking wheels are available in both black and clear plastic. Most juvenile furniture casters, such as used on cribs and bathinets, are of the clear plastic type. On lightweight furniture of this type they can be used on tile, linoleum and wooden floors as well as on carpets and rugs. Plastic wheels are speedily replacing the older steel and wooden wheels.

Cushion tread composition wheels are made of rubber and have a soft tread vulcanized to a hard rubber core. This type wheel affords maximum floor protection and is especially good for use on both light and heavy-weight furniture on linoleum, wood, cement and tile floors. They are quiet and ride well over door sills and other obstacles. This latter advantage is especially true of the larger diameter cushion tread wheels used on kitchen utility tables, TV stands and other furniture moved from room to room.

Plate casters are attached to a flat wood or metal surface. They are used on chests, sofas, lounge chairs, tool boxes, utility carts, etc. The plates have four mounting holes and can be attached with wood screws, bolts and nuts or by welding. Allow at least ¼-inch clearance on all four sides of the plate to eliminate splitting when attaching to wood.

There are two basic styles of stem casters, one for wood and the other for metal furniture and equipment. Both are normally used with a socket or sleeve which fits into a drilled hole in a wooden leg or into metal tubing. Stem casters for wooden furniture are generally of the "grip neck" type. They have maximum wheel diameters of three inches. The caster socket is installed into a drilled hole. They come with a toothed track-plate that helps hold the socket securely in the wood, the teeth being tapped into the base of the leg. The caster, which has a headed stem, is then pressed into the socket so the head slips past the top of the socket and the caster is held securely. If the caster and socket drop out of old furniture legs, one solution is to drill a larger hole, glue in a hard wood dowel and redrill to accommodate the socket. Hard wood holds the caster socket better than the soft wood.

Casters are available for metal tubing in two basic styles; one is the type with a separate steel socket that holds the caster in the tube and the other is the so called "box spring" type. The latter has a spring steel socket permanently attached to the caster stem and is pressed into a tubular leg. This style is used on lightweight furniture. The former type sockets are press-fitted into the tubular leg and the caster stem is inserted into the socket. Both types of metal tube casters are purchased to fit specific tubing sizes. Measure the inside tube dimensions and ask for the caster and socket to fit. A simple means is to set the empty leg onto a blotter to impress a perfect outline of the tubing. Interchangeable sockets are also available for adapting wood furniture casters to metal tubing.

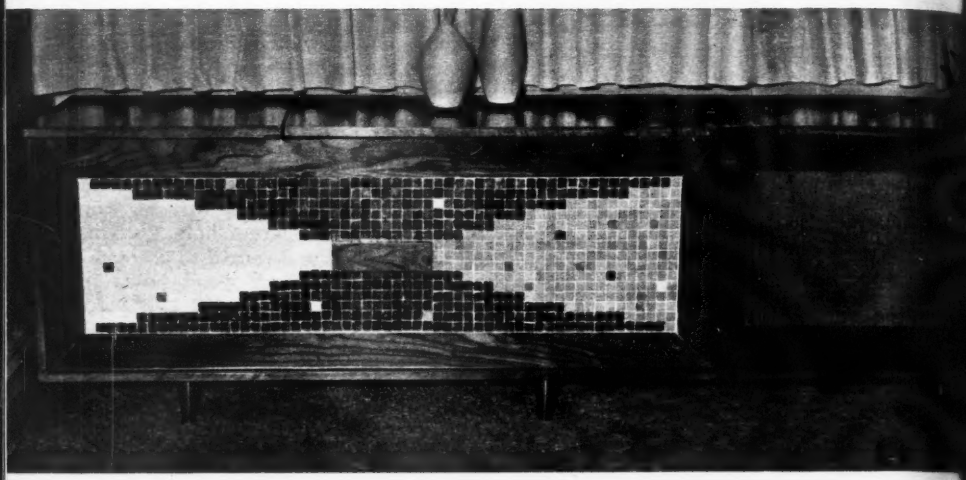
There are many special casters available through your hardware dealer. He normally carries a stock of the usual wood and metal household casters, but can order a wide variety for special uses.

Double wheel casters are ideal for use on pianos, heavy chests, utility dollies and work benches. They carry twice the load of single wheel casters and, because of the double tread, spread the load and give maximum floor protection. Double wheel casters, either plate or stem type, are available with cushion or hard tread wheels,

[*Continued on page* 161]

Golden Hammer Award Winners

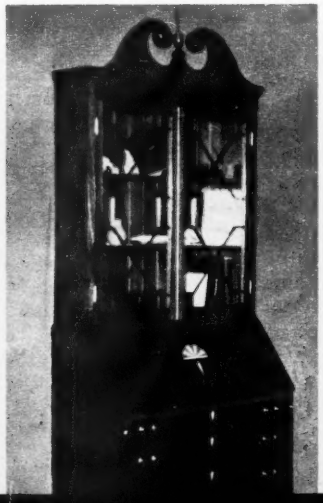
Each craftsman whose project is shown has received a 24-karat gold-plated Hammer and a Workbench Award Certificate. How about sending us a *black-and-white* photo and full description of your latest project? If you aren't a winner you may still receive as runner-up prize a 14-karat gold-plated Golden Hammer Tie Bar or MI's Certificate Of Merit. Photos of you and your workshop are also eligible. Send entries to MECHANIX ILLUSTRATED Golden Hammer Awards, 67 West 44th St., New York 36, N.Y. If you want entries returned, please enclose postage. Entries cannot be acknowledged.



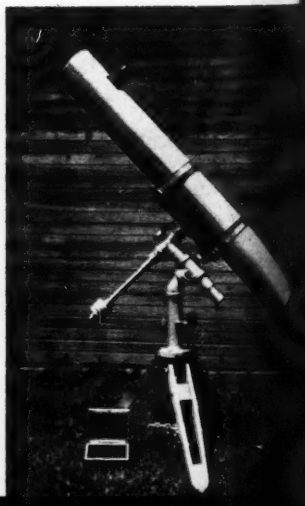
HI-FI CABINET, built by Joseph Nofil of Brooklyn, N. Y., runs the full length of a 13-foot room. Left section houses the hi-fi unit, center section the bass reflex speaker, and storage cabinet is on the right. The two sliding doors are matching patterns of inlaid mosaic tile.

MODEL of the De Havilland Mosquito Mark XVI can hit 70 mph on static line. Made by Gary Pike, Wellington, N. Z.

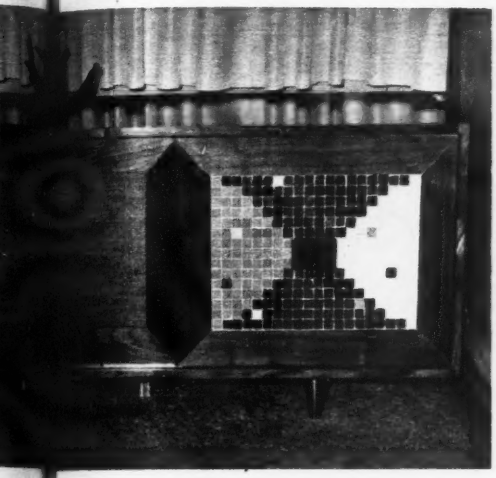
BREAKFRONT, by Buel Rogers, Clay City, Ky., was built from MI plans. Inlaid cherry-maple fan design was builder's idea.

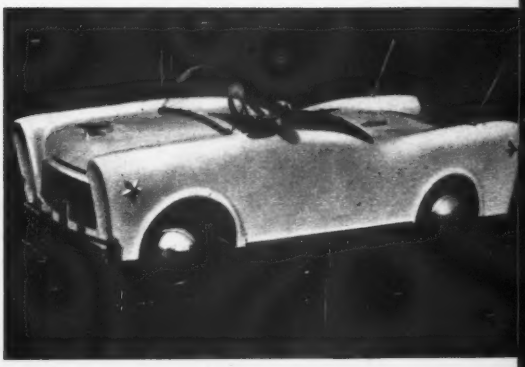


REFLECTING TELESCOPE made by Byron Hardesty of Lima, O., features sturdy pipe fittings for its mounting. It was built for $50.



The following craftsmen have been awarded GOLDEN HAMMER TIE BARS for their projects: Lloyd R. Dickinson, San Diego, Calif. . . . Joseph D. Sorya, Fall River, Mass. . . . John L. Hardig, Ayden, N. C. . . . James Trauclair, Gramercy, La. . . . O. F. Gorannson, Springfield, Mass. . . . Melvin T. Clukey, Dexter, Mo. . . . Kenn Hildebrand, East Lansing, Mich. . . . William H. Chase, Markleysburg, Pa. . . . Joe Black, Boise, Idaho . . . Richard Pratt, Marquette, Mich. . . . Carlo Valkovich, Joliet, Ill. . . . Harry F. Clapham, Wilmington, Del. . . . William E. Owen, Alexandria, Va. . . . Yukio Sadamura, Los Angeles, Calif. . . . Joseph A. Kosnosky, Friedens, Pa. . . . Betty Wise, San Antonio, Tex. . . . Carl & Clifford Park, Hobart, Ind. . . . M/Sgt. Charles E. Caldwell. [Continued on page 160]

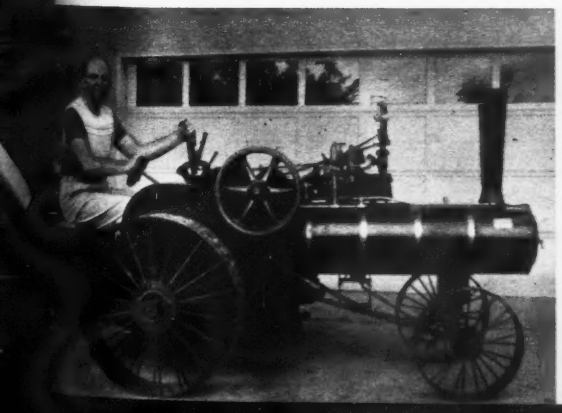




HOMEMADE CAR with molded Fiberglas body was designed and built by John Small of Troy, Ohio. Car is powered by a 5 hp Cushman engine which is installed over the rear axle and which drives the car by means of a roller chain. Over-all length of body is 8 feet 3 inches; wheelbase is 5 feet.

STEAM TRACTION ENGINE was built to one-half scale of the old Advance-Rumely steam engine. Eugene Roggeman of Minneapolis, Minn., did all the work himself and completed the machine in five years of spare-time work.

RUNABOUT is a sturdy 12-footer of oak and marine plywood. It was built and designed (with the aid of a pal) by Dennis Young of Enid, Okla. Cost of materials was about $150 and construction time was a fast two months.

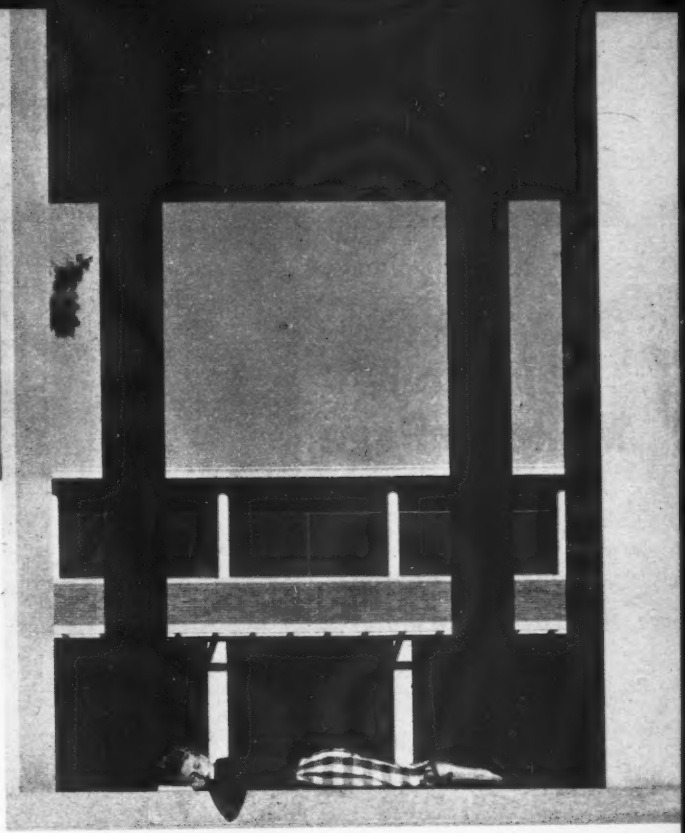


MONTHLY PHOTO CONTEST

1st Prize ($25) ....LONESOME Sid Kaplan, of New York City, caught this shot with a 35mm Canon. He used Plus X film; setting was f-5.6 at 1/50th.

$10 Award....EVEN IN DEATH John Pawley, Redding, Calif., shot with a Minolta, exposed Verichrome Pan film through a G filter; f-11 at 1/50th.

ease put your name, address d picture-taking data on back each print. Wrap with card-ard stiffeners and enclose a f-addressed stamped envelope postage for return of unused otos. Prize-winning pictures are t returned. Judges are MI Edi-rs. Duplicate prizes awarded in se of tie. Address entries to: echnix *Illustrated*, Photo Con-st, 67 W. 44th St., N.Y.C. 36.



$10 Award .....CO-ED
This picture was taken by John F. Moore of L. A. He set his 4x5 Gundlach view camera for f-32 at 1/200th, used Super Pan Press film.

$10 Award .....TUCKED IN FOR THE NIGHT
Thomas Martin, Green Bay, Wis., loaded Rollei with Pan X, exposed two minutes at f-5.6.

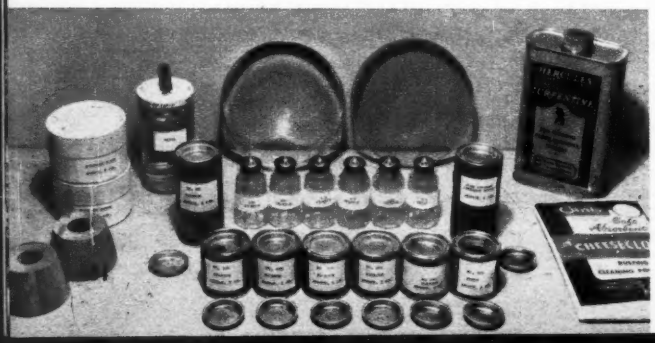
The Amateur Telescope Maker's Page

See the moons of Jupiter, craters in the Moon and rings of Saturn.

By Robert Brightman

A TEN-DOLLAR TELESCOPE

IT was back in 1948 that we started with a great deal of trepidation and misgiving a department in MECHANIX ILLUSTRATED which was soon to be called, *The Amateur Telescope Maker's Page.* Prior to that time the only publication giving any space at all to telescope making, the hobby of hobbies, was our esteemed contemporary, the *Scientific American.* In fact, it was this magazine that caused us to be bitten by the mirror-grinding bug. The *Scientific American,* however, after first starting off on simple mirror-grinding and telescope-making soon went off into the esoterica of Amici prisms, Cassegrainians



MIRROR-MAKING KIT includes two glass disks, abrasives, pitch, rouge, lenses for an eyepiece.

and Gregorians, leaving what we fondly believe to be a vast segment of the American population only too eager to learn more about this business of walking around a barrel.

And now, we are trying to indoctrinate a new group of fans by introducing a reflecting telescope that can actually be built for less than ten dollars. This instrument is not a toy. It will actually reveal the rings of Saturn, craters on the Moon, four of the 12 satellites of Jupiter and the phases of the planet Venus.

We have made special arrangements with the Edmund Scientific Corporation of 101 East Gloucester Pike, Barrington, New Jersey, to supply all MI fans reading this article with a mirror grinding kit for only nine dollars. This kit includes two six-inch disks of glass, abrasives, pitch, rouge, a diagonal mirror and two lenses with which to make an eyepiece.

What Power?

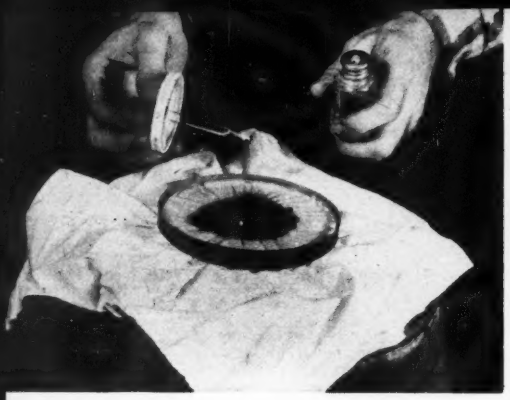
While the power of this telescope can be pushed up to 300 times, we urgently beseech you to stick to 100 power or even less. In fact, if you are living in the city, you will even see better with 50 power. Don't forget that it is the initial power that is important. In other words, 200 power is only four times that of 50 power. So, by all means we recommend you stick to 50 or 100 power and not go to the extreme of 300 power, the magnification that the telescope we are going to describe is capable of yielding.

To begin. First of all you will need a workbench. The best type of workbench for grinding a mirror is a barrel—a plain, ordinary old barrel that can be weighted with concrete or rocks. The barrel should be about 31 inches high. In addition to the barrel you will need an electric hot plate, some turpentine, some rags, an eye dropper, a glass jar and a couple of wooden cores, the kind that wrap-

MOUNT A BOARD over the top of the barrel. Hole in center is for wrapping paper core.

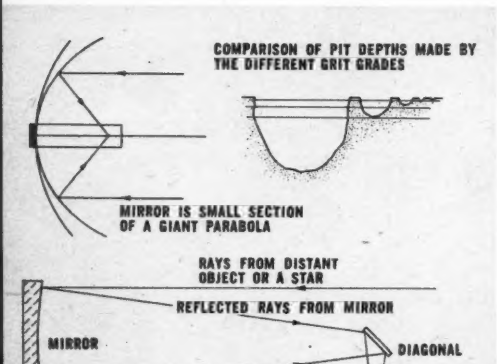
MELTED PITCH is used to fasten handles to the back of mirror and back of tool.

A CLEAN CLOTH should be placed over the barrel hole before inserting the tool.



SHAKE some of the No. 80 carbo on the tool and then add a few drops of water.

NOW GRIND. Horrible sound isn't it? Rotate mirror, take a step around barrel.



ping paper is wound on. After you have procured your barrel, place it in a convenient spot in the cellar where the temperature is fairly even and not subject to extremes of hot and cold. Cut a hole in the top of the barrel wide enough to accept one of the wooden cores previously mentioned, or use a board across the barrel as shown.

When you receive your kit, unpack it and inspect the two pieces of glass that are in it. Each one is six inches in diameter. One piece is slightly thicker than the other. The thicker one we shall call the *mirror,* the thinner one the *tool.* Break off a piece of pitch, which is part of the kit, and heat it in a saucepan over the electric plate. Watch the pitch carefully so it doesn't catch on fire or boil too much. Place the two pieces of glass on a clean sheet of newspaper. Moisten

PITCH LAP is made by pouring melted pitch over tool. Paper collar holds it in place.

WHEN PITCH HAS COOLED, paper collar should be stripped away as shown below.

A SHARP EDGE on the mirror or the tool should be removed by beveling as shown.

AFTER YOU ARE FINISHED with each grade, remove tool, cloth, clean up carefully.

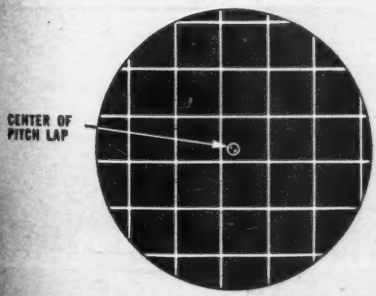
the back of each piece with a little turpentine, then pour about a teaspoonful of pitch over the center of the back of each piece of glass. Quickly apply the wooden wrapping core to the pitch pool. Do the same to the other piece of glass, the tool. The wooden core, now affixed to the back of the mirror will become a convenient handle for grinding and holding the mirror as we proceed with our work.

Now get a rag—part of an old bed sheet is fine—and place it loosely over the hole in the barrel. Next take the tool and place it over the barrel so that the handle is forced through the cloth and into the hole in the barrel or the board. At this point you may be wondering, why all this fuss about a handle on the back of the tool? Why not cement it directly to the barrel head? Please be patient and we will tell you why later.

Now proceed with an examination of the seven grades of Alundum, Carborundum, or grits as we will sometimes call them, packed with the kit. Each grade starting in with the coarsest, No. 80, will be used in grinding our mirror. Place each grade of grit in a separate salt shaker, or use the handy perforated covers that come with the kit. Make sure that you do not contaminate one grade of grit with another. If contamination does result you will be subject to a fearful tragedy—a scratch. This is much worse than having a mother-in-law extend her visit, we assure you.

Fill a jar with water and, using the eye dropper previously mentioned, sprinkle a few drops of water on top of the tool. Remember now, the tool is

CENTER OF THE PITCH LAP should not coincide with any of the grooves to be cut.



A WETTED HACK SAW BLADE is used to cut the facets in the pitch polishing lap.

STRAIN WATER AND ROUGE solution through two layers of clean cheesecloth.

THE POLISHING STROKE is identical to the stroke used in grinding. This is a gory sight!

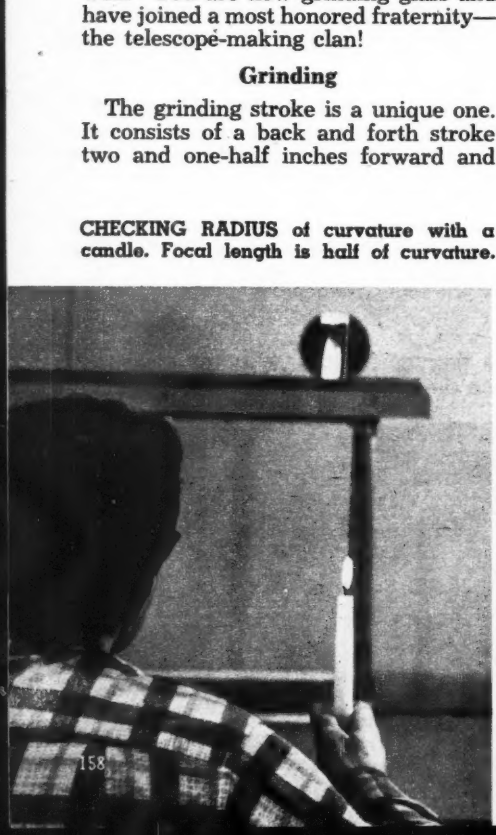
the thinner disk of glass reposing on the barrel. Next sprinkle the coarsest grade of carbo, No. 80, on top of the tool. Now place the mirror over the tool and firmly grasp the handle in both hands. Slide the mirror over the tool back and forth. A rasping screeching noise will assail your ears. Don't be alarmed. All is well. You are now grinding glass and have joined a most honored fraternity—the telescope-making clan!

Grinding

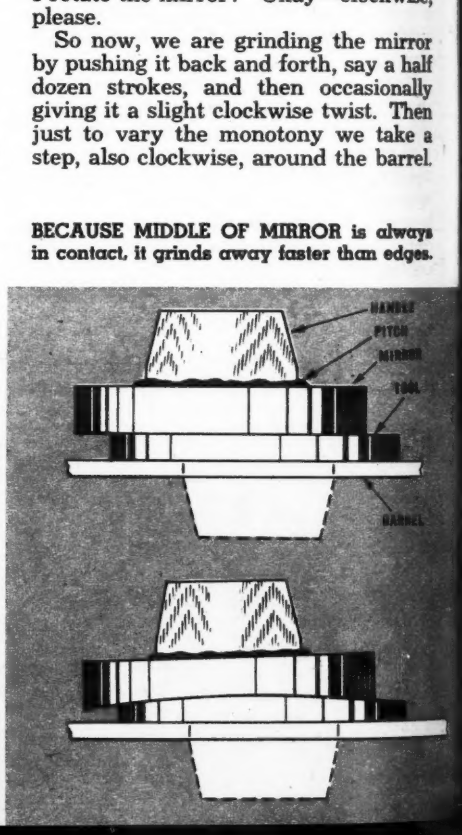
The grinding stroke is a unique one. It consists of a back and forth stroke two and one-half inches forward and two and one-half inches back. In other words a total of five inches. As you push the mirror back and forth, slowly rotate it in your hands in a clockwise direction. Why clockwise? It really doesn't matter. You can rotate it counterclockwise if you desire but invariably people write in and ask which way shall I rotate the mirror? Okay—clockwise, please.

So now, we are grinding the mirror by pushing it back and forth, say a half dozen strokes, and then occasionally giving it a slight clockwise twist. Then just to vary the monotony we take a step, also clockwise, around the barrel.

CHECKING RADIUS of curvature with a candle. Focal length is half of curvature.



BECAUSE MIDDLE OF MIRROR is always in contact, it grinds away faster than edges.



Somewhat like the complicated motion of the earth around its axis, and the earth around the sun, and the sun careening off somewhere in space, we too in our own small world down in the cellar are grinding our mirror with a combination of three strokes: back and forth, a clockwise turn, then a step around the barrel—a much more dignified dance step than rock and roll!

As you continue with this serious little jig you will notice that the grit has ceased to cut. So, shake a few more grains on the tool head and a few more drops of water and continue pirouetting around the barrel. If you don't get tired and continue this business you will notice after about two hours of grinding that the mirror has become slightly concave while the tool has become convex. This will only be apparent after about two hours' grinding.

"Okay, okay," you say, "when shall I stop?" You will stop when the curve has reached a certain depth. This in turn is governed by the focal length of the telescope we are going to build.

We will digress a few moments and examine an elementary law of optics: the focal length of a mirror is equal to *twice* the radius of curvature. The mirror we are planning to construct will have a focal length of 48 inches. An inch or two more or less will not matter. So, to get a focal length of 48 inches we need a radius of curvature of 96 inches or *2f (focal length) = (curvature)*. That is fine but just how do we *know* what the radius of curvature for a 48-inch mirror is? Easy enough!

After some sort of a curve has developed on the mirror, determined by placing a straight edge across the mirror, we can determine its radius of curvature. Wash off all the grit from the mirror, sluice it with water and stand it up on edge. Chock it so that it will not roll.

Testing For Curvature

Now then, light a candle—that's right, a candle, and walk up to the mirror. The room should be fairly dark. You will be able to see the reflection of the candle in the mirror as you move the candle from left to right. Move back from the mirror and keep moving the candle from left to right and right to left. Keep moving back. As you do so you will notice that the reflection of the candle will grow larger and larger but it will always move in the same direction that you move the candle. But, at a certain point you will notice that the mirror is suddenly filled with light. Then, as you keep backing up and moving the candle, the reflected image from the mirror will move to the *right* when you move the candle to the left and vice-versa. When that occurs you have passed the *radius* of curvature. Move back to the point at which you saw the candle become a blob of light.

You may find that this point is about 20 feet from the mirror. This means that your mirror has a focal length of half that or ten feet or 120 inches. You will have to continue grinding away until the curve becomes deeper, for as the curve deepens the focal length decreases. Keep grinding away until the candle test shows you that you have reached a curvature of about 110 to 115 inches, the exact distance is not too important. At this time the mirror will show a very plainly visible curve when a straight edge is applied to it.

We assure you if someone were to see you walking around the barrel and then backing up from a piece of glass with a candle in your hand he would definitely think you're a specimen for the loony hatch. But remember, this is all in the interests of science so keep a stiff upper lip and keep grinding away.

Continue with the next finer grade of Alundum, No. 120. Keep grinding away for at least an hour. Then go on with the succeeding finer grades of grit. *Each grade should be used for at least an hour in order to make certain that pits left by previous grades are completely eliminated.*

When you have finished with the seventh and final grade of grit, the No. 305 emery, your embryo mirror should have a very smooth satin-like finish. Its radius of curvature at this point should be between 96 and 100 inches. You can determine the exact focal length of the mirror by holding a ground glass next to the candle. At the point where the mirror shows up as a blob of light to the eye, it will show a sharp image of the candle flame, upside-down, on the ground glass. *This point is twice the focal length of your mirror.* For, as we previously indicated, the focal length is half the radius of curvature.

[*Continued on page* 172]

USS Forrestal

[*Continued from page* 128]

Tube. Cement the skeg pieces to each other and to the hull with the stern tube in between. Then sand smooth, apply two more coats of sealer and sand again.

Gun mounts and platforms are carved from scrap balsa.

The flight deck consists of ⅛-inch pine strips forming a honeycomb structure covered by ⅛-inch sheet balsa. Cement the sheet balsa together to form the lower part of the deck. Now mark the framework locations on the wood for assembly over the deck bottom covering.

Pin the framework pieces in place before cementing the joints. When dry, remove the pins and cover the top of the frame with ⅛-inch sheet balsa.

The covering pieces run diagonally across the deck at a 90° angle to the lower covering. Cement each covering section to the next section and to the framework until the deck is covered.

The deck control tower is of ½-inch sheet balsa. Apply wood filler, then sand smooth. Remember, apply plenty of coats of sealer on all pieces.

Affix the rudder next, then add other details such as guns, gun turrets, celluloid catwalks, anchors, etc.

The flight deck is fastened to the hull with two countersunk wood screws. By cementing plywood inserts into the deck you will prevent these screws from damaging it. Drill a small pilot hole in each insert to keep it from splitting.

The electric motor operates on two six-volt dry cell batteries. Fasten the motor to a plywood bedplate with roundhead wood screws and install this assembly in the hull. Carefully mount the motor at the proper angle. Cement the bedplate into the hull, then add the spring-type universal joint.

Connect up the batteries, add the flight deck and float the model in a tub of water. Correct the ship's trim by shifting the batteries if necessary.

Install a slide switch at the stern as indicated. Cut a recess for it, drill a hole for the wire, and cement in place. Use stranded insulated wire for all connections.

Operating the model is easy. Simply set the rudder, place the model in the water, and flick on the switch. •

Golden Hammer Awards

[*Continued from page* 151]

Lewes, Del. . . . Jerry T. C. Ohall, Seattle, Wash. . . . Oscar Holte, Windmure, N. D. . . . Floyd M. Sell, Wolcott, Ind. . . . J. R. Knopfler, Boulder Creek, Calif. . . . E. C. Ulsenheimer, St. Petersburg, Fla. . . . Ray Lundeke, New Bremen, Ohio . . . Joseph Spagnolo, Chicago, Ill. . . . David Gage, Toronto, Ontario, Can. . . . Robert J. Bigelow, Reseda, Calif. . . . Clarence P. Miller, Jr., Souderton, Pa. . . . John M. Chuit, B. C., Can. . . . Richard A. Demoret, Altoona, Pa. . . . Bernard E. Drauch, Chelinsford, Mass. . . . Junior Huckaby, Columbus, Ind. . . . Frank Dietz, New York, N. Y. . . . Earl B. Swatner, Jr., Carlisle, Pa. . . . Ralph Gaulier, Edgewood, R. I. . . . Robert Hutchens, Council Bluffs, Iowa . . . Frank Signorelli, E. Meadow, N. Y. . . . Joseph R. Castledine, Palmer, Mass. . . . Emanuel J. Mangione, Red Hook, N. Y. . . . S/Sgt. Robert J. Raphoon, APO 942, Seattle, Wash. . . . Raymond Meyer, Canton, Ohio . . . John J. Sloan, W. Hempstead, L. I. . . . William H. Holm, Muskego, Wisc. . . . D. T. Clapp, Brocton, Ill. . . . Joseph V. Robinson, Howard Beach, N. Y. . . . Robert Groh, Columbus, Wisc. . . . Donald Osborn, Fresno, Calif. . . . Ray Stoltz, Wildwood, Ill. . . . Harold R. Henneberger, Tampa, Fla. . . . William T. Whale, Tampa, Fla.

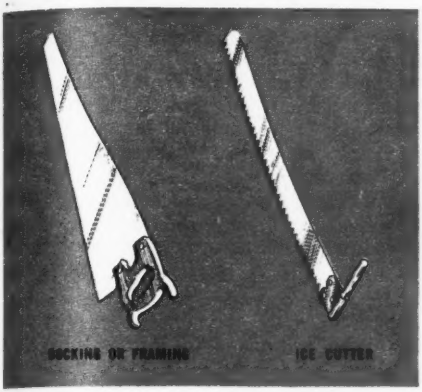
The following craftsmen have been awarded CERTIFICATES OF MERIT for their projects:

James Demilt, Baltimore, Md. . . . Robert Tyler, Springfield, Mass. . . . Edward G. Van Allen, Paterson, N. J. . . . Robert Langon, Austin, Minn. . . . Herbert Peck, New Carlisle, Ohio . . . D. Horler, Timnbury, Nr. Bath . . . Jos. Karper, Detroit, Mich. . . . George C. Miller, Morton, Ill. . . . John B. Wine, Abilene, Tex. . . . Leslie Newton, Vancouver, B. C., Can. . . . Richard Posek, Brooklyn, N. Y. . . . Sp 3 Adrian J. Luzzi, APO 46, New York, N. Y. . . . Hank Rabbach, Jr., Watertown, Wis. . . . William Crowley, Rochester, N. Y. . . . Charles H. Borenstein, New Rochelle, N. Y. . . . W. L. Richardson, Toronto, Ont., Can. . . . Lucien Blais, rue de l' Eglise, Can. . . . Jerry Rosenstein, Miami Beach, Fla. . . . H. Russell, Salisburg, N. C. . . . Angelo Nardick, Aliquippa, Pa. . . . Michael Gregor, Berwyn, Ill. . . . P. B. Cline, Barrie, Ont., Can. . . . L. Goldstein, Brooklyn, N. Y. . . . Bill Tote, Lenoir, N. C. . . . Archie Rouleau, Jr., Fitchburg, Mass. . . . L. P. Lichtenberger, Webster City, Iowa . . . Harry Vust, Manitoba, Can. . . . Walter T. Schrifit, South Fork, Pa. . . . G. G. Riach, Salem, Ore. . . . John Turek, Toledo, Ohio . . . Hal M. Campbell, Olney, Ill. . . . Terrance A. Christman, Castle Dale, Utah . . . Elliot Thomas, Bareville, Pa. . . . John W. Page, Joplin, Mo. . . . LeRoy Wright, Jackson, Mich. . . . Charles Hambel, Hicksville, N. Y. . . . Robert Reghitto, Stockton, Calif. . . . Stas C. Zacki, Phoenixville, Pa. . . . Edward & Virginia Simmons, Lebanon, Ind. . . . R. L. Hansen, Milwaukee, Wisc. . . . Robert H. Gill, Birmingham, Ala. . . . Daniel Holly, Patuxent River, Md. . . . Ray Creed, Victoria, B. C. . . . Albert Bator, Sunnyside, Wash. . . . M/Sgt. Roy D. Harvey, Walker A.F.B., N. Mex. . . . Paul Cernak, Montvale, N. J. . . . J. J. Decker, Glendale, Calif. . . . Walter R. Schneider, Puyallup, Wash. . . . Jack Campbell, Michigan, N. Dak. . . . James F. Gambrell, Madison, Tenn.

Watch for the names of more winners next month. •

The Saw

[*Continued from page* 148]



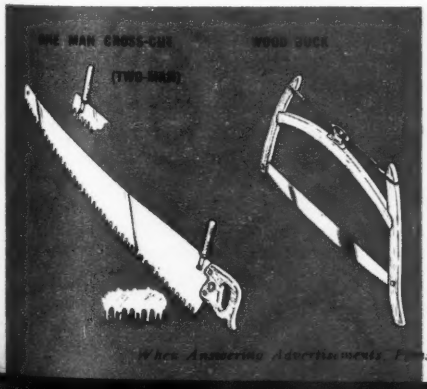
saw for cutting the food—especially meats—to manageable proportions after it has been frozen.

A plasterer's saw may be 20 to 28 inches long. It looks like a handsaw but has only about three points per inch. It is made to cut all types of gypsum insulation blocks, heavy beaver board, plasterboard, etc. Its large and heavy teeth are so filed and set that they will not fill up while cutting.

The buck saw—either the Swedish tubular type or the old wood frame type—may still be purchased; also available are the one- and two-man crosscut saws. Today, power chain saws have largely replaced these saws. However, many homeowners still prefer to employ the old-fashioned hand method of felling trees and cutting up firewood just for the healthful, outdoor exercise.

Remember, quality saws, if properly cared for, will give you many years of faithful service—so treat them well.

—*Clarence Martin*



All About Casters

[*Continued from page* 149]

two inches in diameter.

Casters with special brackets are available for use on angle iron and flat or formed metal legs such as are found on many work benches and shop tools. The brackets can be attached either by welding or with bolts and nuts. A socket is part of the bracket and takes a special caster with a friction-grip, banded stem. The spring band retains the caster securely in the socket, yet permits easy swiveling. Casters with octagonal shaped stems are also available for use with angle iron legs and do not require a socket or bracket. Instead, they have mounting holes in the stem to permit direct attachment with bolts and nuts.

Office supply dealers carry a good line of the double ball bearing casters for wood and metal office chairs and other furniture. These casters can be used on many types of household furniture. Faultless Caster Corp., one of the largest caster manufacturers, has a caster that features a combination stem and plate and is available through many office supply dealers. This style caster is ideal for wood furniture where the socket has become worn or the hole greatly enlarged. A plain solid stem fits into the hole, generally without drilling, and a permanently attached diamond-shaped base plate permits attaching the caster to the bottom of the leg with two wood screws.

The professional housekeepers—hotels, motels and hospitals—use casters on practically all of their furniture and select them carefully, getting the right caster for each application. They know mobile furniture substantially reduces cleaning time and effort. Hotels frequently equip their beds with "bed carriers." These simply constructed devices permit use of large, easy-rolling wheels. The beds can be easily moved, yet the casters are out of sight when not in use. All heavy furniture can be fitted with casters to permit thorough house cleaning and room rearrangement. Small, strongly built dollies under refrigerators and automatic washers provide the same kind of convenience. •

When answering advertisements please mention
MECHANIX ILLUSTRATED

Cure For Cold?

[*Continued from page* 61]

After the first batch of vaccine was produced, Dr. Price tested it on himself. No ill effects were produced.

Then came the large-scale tests. The usual laboratory rats and guinea pigs can't catch the common cold. Chimpanzees, the only animals that do catch colds, were too expensive to be used in the numbers needed. So the tests had to be done with human volunteers.

After investigating the possibilities, it was decided that children, being most susceptible to colds, would be best for the tests. So a group was selected after permission was obtained from the parents.

One group of 100 children between the ages of 12 and 14 who lived and slept in a large cottage was typical of those selected for the test. Fifty of them received two inoculations, a month apart, of the vaccine. Twenty-five received two inoculations of plain serum without the inactive virus. The remaining 25 received two inoculations of sterile saline solution.

Five and a half weeks after the second injection, an outbreak of the common cold swept the cottage. When it was over, a survey showed that the vaccine was 80 per cent effective. Eight out of every ten children receiving the vaccine were immune despite their exposure to the cold; the children in the other two groups caught cold as usual.

Not given to blowing his own horn, Dr. Price speaks softly about his discovery. The JH virus causes only about 30 per cent of all common colds. The causes for the remaining 70 per cent still have to be determined.

The JH vaccine is only the first victory in the age-old war against the common cold. "I don't think anybody can say whether it can be licked in the near future or whether it will take a long time," maintains Dr. Price. "At least we now have an opening wedge in working with one agent that certainly causes a cold. Using similar methods it might be possible to isolate other agents that also cause colds."

Medical doctors are following Dr. Price's line of cautious optimism. But the reason to hope is there. The common cold looks like it's joining the dinosaur and the nickel ice cream soda in the near future. •

The New Mercury

[*Continued from page* 79]

transmission have a 3.56.

The 430-cu. in. engine means fantastic torque (480 ft.-lbs. at 3000 rpm is claimed). This means that with the right gearing you should be able to tow Toledo right over to Cleveland. These same 430 cu. ins. also demand a lot of fuel to fill them up. Therefore, unless the rear-axle ratio is reduced considerably (meaning less engine turns per wheel turn) you won't win any economy runs with this mill.

A high rear-axle ratio, regardless of the torque, kicks record-breaking acceleration in the head. But anyway you slice it, 0-60 mph in 9.6 seconds is not apt to embarrass you. Also, when you're cruising the turnpike at 70 mph, you'll get a few extra miles between fuel stops. However, if you refuse to be concerned about fuel consumption, all this torque with a lower axle ratio will mean a lot of wasted rubber-spinning by over-enthusiastic throttle-stompers. The 2.69 axle is a compromise. If you don't like it, you can order a 2.91 rear end, which should suck the plate glass window out of the pool parlor as you whiz by to the next traffic light.

Mercury is back again with the free-wheeling fan (which is a page out of Wills St. Claire's book of 35 years ago) and a good one. Above approximately 45 mph, no cooling fan does a bit of good; it actually gets in the way and retards air coming in through the grille. The typical fan can steal more than ten hp at high speeds so you're much better off without it. Mercury's fan works on a thermostatic clutch—meaning that so long as the engine stays cool enough at usual cruising speeds, the fan will remain disengaged and will not sap any extra power, which again means fuel.

Another feature on the Mercury, possibly trivial to some but a real feature to automobile men, is the fact that the spark plugs are easy to get in and out. Some 1958 cars almost need a complete engine teardown just to replace the plugs—which means they won't get serviced.

In summing up, the 1958 Mercury is still the most different-looking car on the road. It's as quiet as a Scotchman when the check is passed and is roadable, safe and comfortable. The 1958 Mercury looks right at home in this new Space Age. •

Drive Turnpikes Safely

[*Continued from page* 83]

kind of public drag strip and driving range where drivers can learn how far they can push their cars. The first time you step on the brake at high speed is a big surprise if you think it's like braking at 20. Next time you're on the pike, all alone *with no one in front or in back of you,* give it a little try. Lots of luck.

I made a tire test not long ago for General Tire, during which I was called upon to make a number of full panic stops from a speed of 100 mph. They paid me well but after I saw the movies I wouldn't have done it again for ten times the money. The bumper was within a quarter-inch of plowing into the concrete, which could have sent the car end over end for the better part of a mile. Your car is a different vehicle when you add a few mph and then try to make it behave.

Turnpike driving is different from suburban short-hauling for the car as well as for the driver. A car that never burns a quart of oil around home may suddenly begin to eat a quart every hour at a steady 70 mph. Fine, mellow, bald-headed tires that have done years of grocery-hauling may go like firecrackers on the pike on a hot day. When you do have a blow-out (I've had lots of experience in this department) don't jump on the brakes. Just let the car slow down and hold it as straight on its course as possible. Oddly enough (from the beginner's viewpoint) the blown tire behaves better at 70 than when you get down to 40 and 35—that's when you want to be holding on to the steering wheel with both hands and everything squared away.

Another thing—never overload your car. The driver needs freedom of movement. An overloaded car is out of balance, top-heavy and sluggish. In emergencies, you'll find you have less pickup than on a short run to your local pizza parlor and your car may develop a strange swaying tendency on curves and when braking.

Everybody who can drive will get out on the super-roads sooner or later. Barring war, 90 per cent of our traveling will be turnpike driving by 1970. That means wise drivers will take steps to learn how

[*Continued on page* 176]

ARTICLE LIST NO. 1
Summaries of articles reprinted from January 1958 MI

1. **Your Skills Are Worth Money.** How to profit from the nationwide skill shortage by learning a trade.
2. **Crickets Put Him In The Chips.** An enterprising Texan makes cricket-raising pay by selling breeders to anglers.
3. **McCahill Tests The '58 Pontiac.** Automotive expert describes his impressions of a popular American car.
4. **McCahill Tests The Swedish SAAB.** A report on the performance and design of a popular foreign automobile.
5. **Fun With Fossils.** Intriguing hobby of collecting evidence of life on earth ages ago is growing in popularity.
6. **The Miracle Of Shellac.** Fascinating facts about a tiny Indian bug that is the source of an everyday product.
7. **Handloading Made Easy.** Shooters save money and get more accurate hits by reloading used cartridge cases.
8. **Arrow In The Sky.** Rocket expert tells how modern missile designers use ancient arrow shape in aerodynamics.
9. **The Hammer.** Short history of man's oldest hand tool with descriptions of special types and how to use them.
10. **Dining Room Set.** Detailed instructions for constructing chairs and an ingenious table in your workshop.
11. **Midget Hi-Fi Speaker.** How to build a small cabinet for an economical sound system for your hi-fi set.
12. **"It's My Book."** You can make your own bookplates by carving designs on a simple linoleum block.
13. **Turn On The Heat.** A clever new product helps your car heater warm up fast; tips on aiding heater efficiency.
14. **Little Fellow.** Californian builds a fast, boy-size speedboat for his youngster and launches a new hobby.
15. **Photographing Sputnik.** How amateurs can take pictures of the famed satellite and its rocket.

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NO. 1 JANUARY 1958 ISSUE

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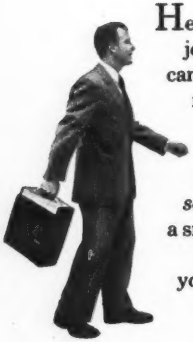
New Kodak 300 Projector

yet shows your slides bigger,



Here's a color-slide projector so lightweight you can carry it like a portable radio . . . so compact, you can store it on a bookshelf. Best of all, it lets you enjoy thrilling *big-screen* projection even in a small room. At a distance of 10 feet, for example, your favorite 35mm color slide will fill a 40-inch-wide screen.

You really have to see and handle the new Kodak 300 Projector to appreciate its remarkable versatility. Try the focusing and elevating mechanism . . . the smooth glide of the new Kodak Readymatic Slide Changer. And when you project your favorite color slide, notice that the rock-steady picture you get is brilliantly illuminated *clear to the corners!*

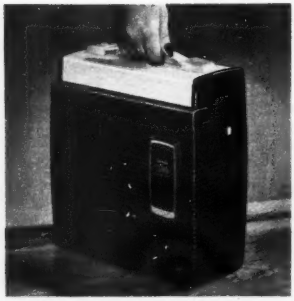
Your Kodak dealer will be glad to show you the new lamp-condenser system and superb 4-inch, *f*/3.5 lens that produce these superior screen results. Ask him, too, about the Kodak 300 Projector's ultra-quiet cooling system . . . built-in cord storage space. Complete with self-cover.

Kodak 300 Projector with Readymatic Slide Changer (holds up to 36 slides in cardboard mounts), $64.50 . . . or as little as $6.45 down.

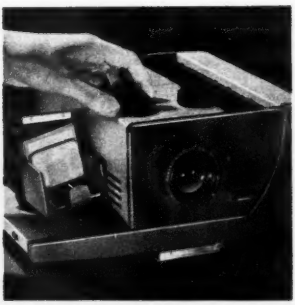
Kodak 300 Projector with 36-slide self-storing Magazine Changer, $74.50 . . . as little as $7.45 down.

Prices are list, include Federal Tax, and are subject to change without notice.

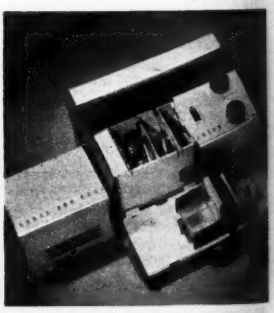
The only projector with the completely new



SO LIGHT, SO COMPACT, so easy to carry! Has self-cover, measures only 5 x 11 inches square, weighs only 9 pounds.



FOCUSING AND ELEVATION adjustments are fast . . . precise . . . with all essential control knobs at your finger tips.



QUICK, E-A-S-Y ACCESS to the lamp and condenser compartment—storage space for your lamp cord is built right in.

EASTMAN KODAK COMPANY,

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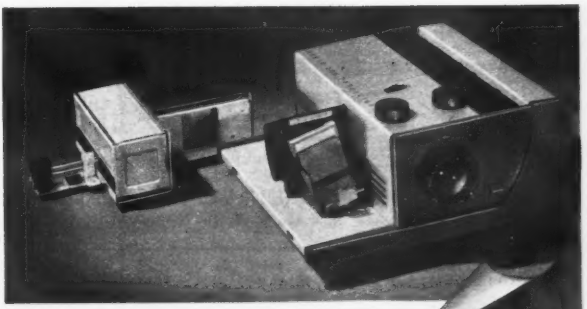
Kodak **READYMATIC SLIDE CHANGER**

PROJECTS 35MM, BANTAM, or the new, big 1½ x 1½ slides. Also (with an adaptor) single frames of your stereo slides.



CHOICE OF EXCLUSIVE new Kodak Readymatic Slide Changer which accepts up to 36 slides per loading, or self-storing, magazine-type slide changer.

Kodak
TRADEMARK

Rochester 4, N.Y.

Would You Like to Make $1,000.00 a Month?

That's what Stanley Hyman has made selling the amazing new PRESTO Fire Extinguisher!

STANLEY HYMAN

All over the United States, more and more men and women report large profits from introducing the new Presto Fire Extinguisher. And no wonder! 11,000 people died in fires last year! Over half were women and children! Civilian defense authorities have said that in the event of atomic attack regular fire-fighting forces will be fighting large fires and that the people must be equipped to take care instantly of the little fire that might so easily become a big one. So an eager public has been waiting for a handy new kind of fire extinguisher—one *without the drawbacks* of large, bulky, expensive models. Now it's here.

Over 3 Million Prestos Already Sold!

Presto salesman H. J. Kerr reported making $20 a day. William F. Wydallis—$15.20 an hour. Peter Zuccaro, a beginner—$169 in one week. And this report from Stanley Hyman:

"I have been selling the Presto Fire Extinguisher for well over a year and have found it to be the fastest money-maker and quickest-selling item ever produced. If a man demonstrates it intelligently, sales follow automatically.

"I have made an excellent living with the Presto Fire Extinguisher, having made over $1,000 a month. Presto is a 'natural.' "

How You Can Make Good Money Too

You can make good money in this way too! Just start introducing this new kind of fire extinguisher to civil defense workers, owners of homes, farms, cars, boats, filling stations, buses, trucks, factories, offices, in your locality and to stores for re-sale.

The Presto is so light—so small—so handy—even a child can put out a blaze with it. So inexpensive ($4.95) anyone can afford it. Yet its contents (a new wonder chemical developed during the war) have been rated 1.5 to 6 times as effective as other extinguishing agents on an equal weight basis!

- Ends fire fast as 2 seconds
- Contents 1.5 to 6 times more effective on an equal-weight basis
- Weighs less than 1 lb.
- Fits in palm of hand
- Never corrodes or deteriorates
- Costs only $4.95
- Guaranteed for 20 years

Nationally Advertised

And what sales advantages for you—as compared with large, bulky extinguishers that cost 4 times as much and are 8 times as heavy! Presto is easier to use. No pumping—no heavy tank or tangled tubes to struggle with. Just a twist of the knob . . . and flames disappear as fast as 2 seconds!

Mail Coupon to Get Started

We give you FREE printed sales aids. You are not required to invest a penny.

Get started now. Every day you hesitate may cost you $10, $15, or even $50 you could otherwise be making. Mail coupon NOW for everything you need.

MERLITE INDUSTRIES, Dept. P-10F
114 East 32nd St., N. Y. 16, N. Y.

MERLITE INDUSTRIES, Dept. P-10F, Presto Div.
114 East 32nd St., New York 16, N. Y.

Please send me illustrated sales literature, liberal profit plan, order blanks—everything I need to start making good money introducing Presto to my area.

Name _____
(Please print plainly)

Address _____

Zone No.
City _____ (if any) ____ State _____

IN CANADA: Mopa Co., Ltd., 371 Dowd St., Montreal 1, P.Q.

"Stop Killing Your Car"

[*Continued from page* 141]

DON'T PARK car in driveway and later drive short distance to garage with a cold engine.

the wiper blades sweep over the glass a few dozen times before you get around to turning them off. Another common mistake is draining engine oil when cold. Make it a rule to have your filling station man change oil while the engine is hot so that more of the sludge will be removed.

Do you turn on the headlights before cranking the engine? Millions do and it accounts for a high percentage of nighttime cranking failures. All that current being sopped up by the lights simply reduces the juice available for spinning the crankshaft.

Do you usually postpone buying gas until the tank is low? Millions do this, too. That's why there is so much carbu-

[*Continued on page* 168]

Rolls Royce is known the world over as an automotive masterpiece
Like 35 other great makes of cars, Rolls Royce uses Champions.

Q. Why do over twice as many car makers—including Rolls Royce—specify Champion spark plugs?

A. Champions give full-firing power. Put new Champions in your car every 10,000 miles. You'll get an *immediate* boost in horsepower...and save gasoline, too!

World's favorite spark plug on land, on sea, and in the air

CHAMPION

see the amazing new
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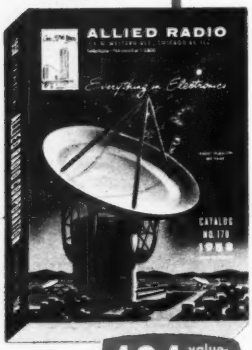
BUILD YOUR OWN!
SAVE MONEY—HAVE FUN



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"Stop Killing Your Car"

[*Continued from page* 166]

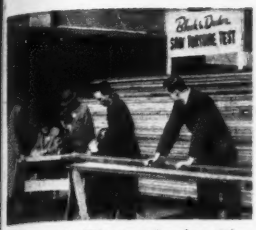
retor trouble—and so many cases of frozen fuel lines in cold weather. Running low on gas increases the chances of dirt, water or sediment in the tank being drawn through to the carburetor. Dirt that passes the filter (and fine sand does just that) gets under the needle valve to prevent it from seating tightly. That brings a stall. It's the kind of conking out that doesn't lend itself to a quick re-start because as the driver keeps cranking, the carburetor just continues to flood the engine. Running around in winter with the tank only partially filled encourages condensation (a ten-dollar word for water).

Over-tightening the air cleaner is another form of car abuse which sometimes causes a lot of engine misbehavior by cramping the choke valve. This sort of thing belongs in the same category with over-oiling the generator. Setting the fan belt too tight or not giving mechanical valve tappets enough clearance are equally bad business. Even the man who likes to keep well ahead on his car-keeping needs to be warned against certain pitfalls. One is the rule about *not* dusting the plastic window of a convertible. Any such dusting will scratch it. Use a damp soft cloth and wipe lightly. Many owners of convertibles know that it is taboo to put the top down unless completely dry but they may make the mistake of going a long time without exercising the top. Automatic tops should be operated at least once a month.

Pump your tires up to the recommended pressure and check the pressure when the car is "cold" not at the end of a fast trip. Tires that are underinflated will flex more, overheat, and reach a higher operating pressure, especially if the car is overloaded and his honor burns up the road.

If you have automatic drive, slow down before down-shifting. This prevents shock to the transmission and particularly heads off a skid if the road is slippery.

Then there is the story of the owner who changed the voltage regulator, thinking he was saving himself some dough. A good electrical man could have told him that all the original regulator needed was a better ground! •



10:05 A.M. The test begins. The B&D Saw will be tested on 2" lumber, making a variety of cuts.

4:00 A.M. It's 18 hours since the test began. Over 4000 ft. of lumber cut so far.

8:30 A.M. Over 22 hours and a third crew of men is on. 13 blades have been used.

Test runs through the night. After 24 hours, saw was still going strong. It was then put on laboratory testing machine to continue test* for 6 more days and nights.

United States Testing Company, Inc., Report No. 37135, Nov. 27, 1957.

7-DAY SAW TORTURE TEST PROVES BLACK & DECKER TOO TOUGH TO BEAT!

Hour after hour, day and night—for one week, a Black & Decker Saw was tested continuously by the United States Testing Company, Inc., Hoboken, N. J. This saw received more wear and tear than most saws ever get in a *lifetime of use*.

And the saw stood up! After seven grueling days and nights, every part of the saw was found to be in perfect condition. Here is proof of Black & Decker quality... why we say Black & Decker Saws are tough enough for any job! THE BLACK & DECKER MFG. CO., Dept. R028, Towson 4, Md. (In Canada: P.O. Box 278, Brockville, Ontario.)

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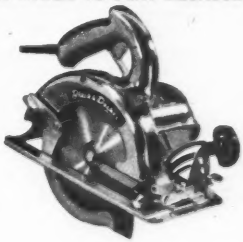
IN TIME FOR
SAWTIME '58
SEE YOUR DEALER NOW

TOO TOUGH TO BEAT BECAUSE OF THESE FEATURES:



- Easier Handling
- More Power
- Proved Ruggedness
- Better Visibility

Heavy Duty Workbench

[*Continued from page* 133]

a coat of sealer followed by a coat of clear lacquer.

The Frame

To make the frame, drill ¼-in. pilot holes in the 4x4 legs to accept the ⅜-in. hanger bolts. Drive these in until about two inches are left exposed. Drill 13/32-in. holes through all 2x3's, making sure they will line up with the hanger bolts.

Assembly

Begin assembling with the crosspieces; first the upper, then the lower section. Place the crosspiece through a bolt, insert a washer and nut and tighten down; repeat this process for the other end. Longitudinal supports are attached next, then the plywood stretcher, which is set well back to allow for adequate leg room.

Drawer Construction

Drawer construction calls for dadoed joints throughout. The sides and back are ½-in. plywood stock, front is ¾-in. plywood and the bottom is ¼-in. If you don't have a dado blade use your circular saw. Make two parallel saw cuts to the required depth, then saw or chisel out from the inside. Glue all joints. Now attach the aluminum runners with ⅜-in. flathead screws to complete the drawers.

To secure the top to the framework, 3-in. heavy angle iron brackets are used at the top of each leg. The backboard tool rack is constructed of ¾-in. plywood and is attached to the back of the bench; it measures 12x60 inches. The tool holder is 4¾x60 inches. The cleats are of plywood and measure ¾x3½x24 in. They are screwed into the legs, edge of the table top and into the backboard.

A set of foot-operated retractable casters may be used as an added convenience for moving the bench. To install these, set them on a ⅛-in. shim with the wheels in the non-rolling position. Mark the bolt holes, drill and bolt into place. Now add a vise to your bench and you're ready to go to work. •

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H MODEL

Hot—Husky—Handsome
handles like the thoroughbred it is!

New bolt from the blue! . . . Harley-Davidson's Sportster H means extra smooth and action-packed power.

Get *12%* more brake hp. with *9 to 1* compression ratio — a cyclonic combination of special high dome pistons, larger intake ports and valves, and racing type tappets.

Visit your Harley-Davidson dealer and test ride a Sportster H.

Inquire about his liberal trade-in and convenient terms.

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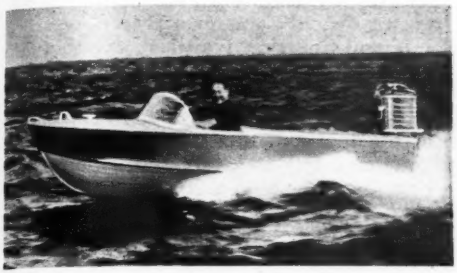
"Sweetest Music This Side of Heaven"



Guy Lombardo drives MERCURY's New Mark 78

"'Sweetest Music This Side of Heaven' has long been associated with my Royal Canadians, but after driving the new Mark 78, I'd say Mercury could claim it for outboards — on every score."

The secret of the sweet, smooth music of this 70 horsepower engine is in its exclusive six-in-line design, proved by experience to be far superior to any other for high horsepower outboards.

Here is the world's supreme expression of outboard dependability and safety. It's the powerful answer to the public's request for better power for bigger, safer, more comfortable boats. The Mark 78 has more exciting new features than ever offered on any outboard — plus the famous compact Mercury look and colorful styling.

Mercury offers the most that's new for '58 — more *all new* engines, more models, more safety features. See your Mercury dealer soon or write for FREE catalog.

MERCURY OUTBOARDS
Dependability with a Punch!

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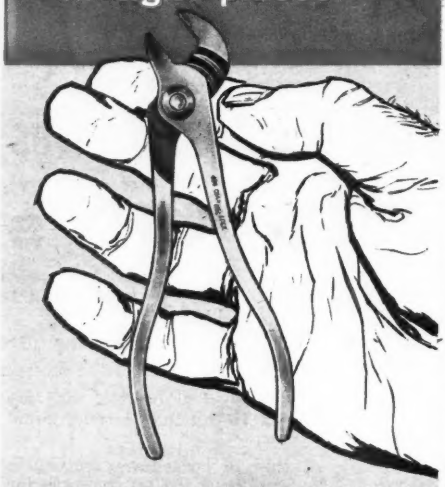
Kiekhaefer Corporation
Fond du Lac, Wisconsin

Guy Lombardo also is famous as a power boating champion. He won the Henry Ford Memorial Trophy, Detroit's Gold Cup Race and set two world records winning the International Gold Cup Regatta.

For a tight grip in tight places...



The "Mighty Midget"

CHANNEL LOCK No. 424

This "mighty midget" is a natural for a tight grip on small work in hard-to-get-at places. Only 4-1/2" long . . . drop forged from high grade steel. Four exclusive Channellock precision grooved jaw adjustments . . . capacity to 1/2". Skilled mechanics say it's one of the handiest pliers in their kits. You'll say so, too!

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ASK YOUR TOOL SUPPLIER FOR A CHANNELLOCK No. 424

Be sure its a genuine CHANNELLOCK
Look for the trademark on the handle

Ten-Dollar Telescope

[*Continued from page* 159]

Incidentally, while you are proceeding with this business of grinding, it is a good idea to keep inquisitive hands and housekeeping enthusiasts away from your pride and joy by bolting an old photoflood reflector over the mirror and tool.

If you find that you have overshot the mark and the radius of curvature is much below 96 inches, you can increase it to the radius you want by reversing the position of the tool and the mirror. The tool, if you have followed our instructions, will have the same kind of handle that the mirror has. Now we are grinding with the tool on top of the mirror and this operation will tend to flatten the curve of the mirror.

The finer grades of Alundum or Carborundum have very little effect on the radius of curvature so it is always a good idea to keep a careful check on the radius of curvature when grinding with the first two grades rather than the last few. But let us assume, with a prayer too, that we have now reached the radius of curvature we want, somewhere between 96 and 100 inches. Well and good. We are now ready for polishing.

Cleaning Up

Remove everything from the barrel head. If you used a board as shown in the picture, get a new one. Wash the barrel thoroughly. Remove all cans and shakers of Carborundum, Alundum, grits or what have you. Take a shower. Clean your fingernails thoroughly and don't forget to shampoo your hair. We are not trying to be facetious. We are just trying to impress upon you the importance of divesting yourself of every single grain of grit. For one solitary grain during the polishing operation will scratch your mirror, a cardinal sin in mirror making. If you are a careful worker you should be able to wind up with a mirror pure and unsullied without a single hair of a scratch to mar its pristine glory.

Now then, everything is clean and shipshape. Install the carefully-cleaned tool on the barrel head. Wrap a strip of light cardboard around the tool to serve as a collar. The tool at this point should be dry and free of water. The collar should extend about one-half inch above the top

[*Continued on page* 174]

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ALADDIN READI-CUT HOMES

ARE ENGINEERED TO SAVE YOU THOUSANDS OF DOLLARS!

LOOK AT THE FACTS: Aladdin sells thousands of houses. Because of the huge quantity of lumber used the average builder cannot match Aladdin's prices. And you save on labor. Instead of paying carpenters $20 a day or more you can easily build, or help build, an Aladdin home yourself. Thousands have done it. Please keep one thing in mind: *When you build an Aladdin Home you get the finest quality lumber and materials — shipped to you Freight Paid.* There's a wide choice of modern designs by Aladdin's architects and your finished Aladdin Home will stand comparison with homes priced far above what you pay. That's why thousands of families who must save are buying Aladdin Homes today. *One thing more: Aladdin Homes are in all 48 States — you can see one near you before you buy.* But first send the coupon above for Aladdin's new 1958 Catalog. It will open your eyes to savings you never thought possible! Mail it today!

Noted for HIGHEST QUALITY and BEST CONSTRUCTION

At DELIVERED PRICES that will SAVE YOU MONEY

110 MODERN FLOOR PLANS
5 to 8 Rooms—RANCH, COLONIAL, CAPE COD, 2-STORY
NOT PREFABRICATED • ALL MATERIALS READI-CUT

from $3,000 We pay the freight

$500 in 4 months spare time

IS WHAT I MADE WITH

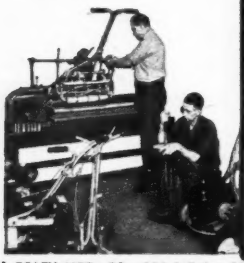
the FOLEY LAWN MOWER SHARPENER

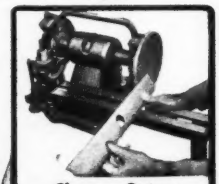
"No one can go wrong with the Foley machine"—V. J. Patterson wrote us. Get in this CASH business where 99c of every dollar is YOUR profit! The Foley Lawn Mower Sharpener handles up to 3 or 4 mowers per hour. Hand mowers run $2.00 to $3.00—power mowers $5.00 to $8.00.

FREE PLAN shows how to start. Foley prices are low—easy payments available. Send coupon today—no salesman will call.

"In my home town of 5,000 I paid for the Foley 4 or 5 times over the first season. I also put a $1035 oil furnace in my new home."—B. Mathews.

"We sharpened nearly 1000 mowers our first season and gained a reputation for the best work."—J. W. Kemper.





Sharpen Rotary Mower Blades

with the Foley Grinder, also circular saws, ice skates, scissors, planer knives, all sharp edged tools.

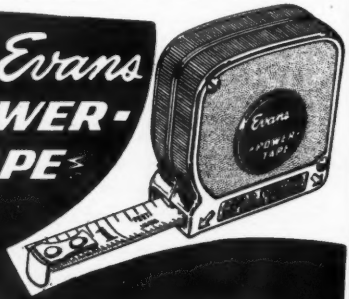
FOLEY MFG. CO., 206-8 Foley Bldg., Minneapolis 18, Minn.

Send FREE PLAN on lawn mower business and Special Combination Offer.

Name_____

Address_____

NEW! *Evans* ***POWER-TAPE***



No More Pushing Blade Back Into Case!

Here's the greatest single mechanical advance in steel tape history! Press the button gently with your thumb — blade returns smoothly. You control the speed. Release the button — blade stops instantly. No "creep," no lost measurements! Chrome-plated case. GIANT sliding end hook — for inside-outside measuring. White steel blade, marked up inches and feet-and-inches — no figuring! Free Tenite carrying case with magnifying lens.

Only $1.89 (10 ft.)

Unconditionally Guaranteed

6, 8, 10, or 12 ft. lengths

Get POWER-TAPE today!

Available only at hardware stores

Evans **RULE CO.,** Elizabeth, N.J. • Montreal, Que.

Ten-Dollar Telescope

[*Continued from page* 172]

of the tool. The paper or cardboard collar should be long enough so it overlaps about two inches. Use sticky tape, glue or a rubber band (it really doesn't matter which) to keep the collar in place.

Moisten a rag with turpentine and swab the top of the tool. Now melt the pitch in a saucepan over the electric hot plate. When it is as liquid as can be without actually coming to a boil, strain it through four thicknesses of cheesecloth into another saucepan or can. Warm it up a bit and then start pouring it over the tool.

Start at the outside, near the collar, and slowly keep pouring it while working toward the center. Don't worry about the pitch leaking through the collar—it won't. When the pitch is about level with the top of the collar, quit pouring. Wait until the pitch has hardened and then strip away the cardboard.

The next step is to sluice the surface of the mirror with a sudsy solution of soap and water. Now carefully lower the mirror over the pitch lap—for this is what we are now going to call the tool—and keep moving the mirror in various directions, an inch or so at a time. These movements will serve to conform the pitch lap to the spherical curve of the mirror. Keep this up for about 45 minutes or at least until the pitch no longer feels warm. The pitch will start to spread out and form a ridge around the outside of the tool—pardon us—lap. Don't let this worry you. Apply some suds to the pitch lap and leave the mirror and the tool in contact with each other overnight. Place a guard over them; the photoflood reflector is fine. The guard is obviously necessary to prevent a possible tragedy.

At this point it is a good idea to go to bed. The next day when you try to move the mirror from the lap your heart will skip a beat, for you will find it practically impossible to move it. Why? The weight of the mirror has caused the outer edge of the mirror to sink into the pitch lap. Cut away the excess pitch with a moistened knife. This should free the mirror and with a little pressure in various directions you should be able to remove it. Carefully slide it off and store it in a safe place.

The next step is to cut facets in the pitch

[*Continued on page* 188]

Superior's New Model 70 UTILITY TESTER®

FOR REPAIRING ALL ELECTRICAL APPLIANCES MOTORS • AUTOMOBILES • TV TUBES

As an electrical trouble shooter the Model 70:

- Will test Toasters, Irons, Broilers, Heating Pads, Clocks, Fans, Vacuum Cleaners, Refrigerators, Lamps, Fluorescents, Switches, Thermostats, etc.
- Will test *all* TV tubes for open filaments, inter-element shorts, burned out tubes, etc.
- Measures A.C. and D.C. Voltages, A.C. and D.C. Current, Resistances, Leakage, etc.
- Will measure current consumption *while the appliance under test is in operation.*
- Incorporates a sensitive direct-reading resistance range which will measure all resistances commonly used in electrical appliances, motors, etc.
- Leakage detecting circuit will indicate continuity from zero ohms to 5 megohms (5,000,000 ohms).

As an Automotive Tester the Model 70 will test:

• Both 6 Volt and 12 Volt Storage Batteries • Generators • Starters • Distributors • Ignition Coils • Regulators • Relays • Circuit Breakers • Cigarette Lighters • Stop Lights • Condensers • Directional Signal Systems • All Lamps and Bulbs • Fuses • Heating Systems • Horns • Also will locate poor grounds, breaks in wiring, poor connections, etc.

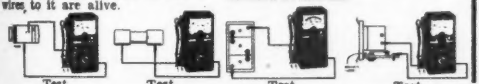
IT'S SO EASY!!

With tester's cord in outlet, current consumption of appliance is read direct on meter when line cord is connected to receptacle on panel. This typical iron takes 7 amperes (Good).

Small electric fan motor indicates 50 ohms (normal resistance).

Control circuits of most furnaces use 24 volts obtained from step-down transformer. Here's how to check room thermostat to see if wires to it are alive.

Manual supplied with Model 70 shows meter needle should move to right when test leads are connected to pins 3 and 4 of this 6AU6 tube. Procedure for testing all tubes used in TV are detailed in manual.



Test Generators — Test Auto Fuses — Test Storage Batteries — Test Circuit Breakers

INCLUDED FREE!!

This 64-page book—practically a condensed course in electricity. Learn by doing.

Just read the following *partial* list of contents:

• What is electricity? • Simplified version of Ohms Law • What is wattage? • Simplified wattage charts • How to measure voltage, current, resistance and leakage • How to test all electrical appliances and motors using a simplified trouble-shooting technique.

• How to test all TV tubes; also simple procedure for determining which specific tube (or tubes) is causing the trouble.

• How to trace trouble in the electrical circuits and parts in automobiles and trucks.

Model 70 comes complete with above book and test leads. Only . . . **15.85**

READ THIS! READ THIS! READ THIS!

You don't pay for the Model 70 until AFTER you have examined it in the privacy of your home! Model 70 is

SHIPPED ON APPROVAL

NO MONEY WITH ORDER — NO C.O.D.

Try it for 10 days before you buy. If completely satisfied then send $3.85 and pay balance at rate of $4.00 per month for 3 months — No Interest or Finance Charges Added! If not completely satisfied, return to us, no explanation necessary.

MOSS ELECTRONIC DIST. CO.
Dept. D-425 3849 Tenth Ave., New York 34, N. Y.

Please rush me one Model 70. If satisfactory I agree to pay $3.85 within 10 days and balance at rate of $4 per month until total price of $15.85 plus postage is paid. If not satisfactory, I may return for cancellation of account.

Name _____

Address _____

City _____ Zone _____ State _____

Even plowing is *easy*—perfect seed-bed in *one* operation with Rotary Plow! . . . only *one* of 30 sturdy, year-round tools.

Powerful 5-HP Gravely Tractor does every lawn, garden and field job *faster, easier, better!* . . . All-gear Drive, Power Reverse. Push-button Starter optional.

EASY PAY PLAN

New 24-page *"Power vs Drudgery"* Booklet shows how Gravely power and performance can solve YOUR problems. Write for it today!

GRAVELY TRACTORS, INC.
BOX 223 DUNBAR, W. VA.

FIELD-TESTED SINCE 1922

NEW AND EASIER FOR EVERYONE TO USE

FOR THE MAN WHO WANTS THE BEST

TURNER Propane Gas TORCH

FOR:
Soldering
Removing Paint
Laying Tile
Sweating Copper Tubing
Thawing Pipes
Removing Putty

The instant lighting torch that burns in any position. No pumping—no priming—for refueling just unscrew the disposable tank, discard, and replace with a new, full tank available everywhere. Complete with fuel. $5.95

Other TURNER Propane GAS APPLIANCES include ONE and TWO BURNER CAMP STOVES and CAMP LIGHT

FREE Folder on TURNER PROPANE GAS APPLIANCES. WRITE TODAY!

TURNER BRASS WORKS
SYCAMORE ILLINOIS

Drive Turnpikes Safely

[*Continued from page* 163]

to do it. When you take that powerful crate of yours out on the pike, remember that the very conveniences and safety features of the super highways—no intersections, villages or lights—have been the undoing of many a Go-Slow-At-Home Joe when he got the bit in his teeth. Check your oil at every fuel stop. Learn how your car behaves at high speeds and carry extra tire pressure for stability at those speeds. Use every trick you know to stay awake and alert. Drive at a tamer pace when you begin to feel tired. And bring lots of dough—these super highways eat it up like crazy. •

When answering advertisements please mention MECHANIX ILLUSTRATED

Clean Up In Business

[*Continued from page* 67]

were delighted. There was not a streak or a ring to be seen. The thick lather had disappeared and the rugs and chairs had been restored to such an amazing degree that they looked brand-new again. There was no trace of any disagreeable odor.

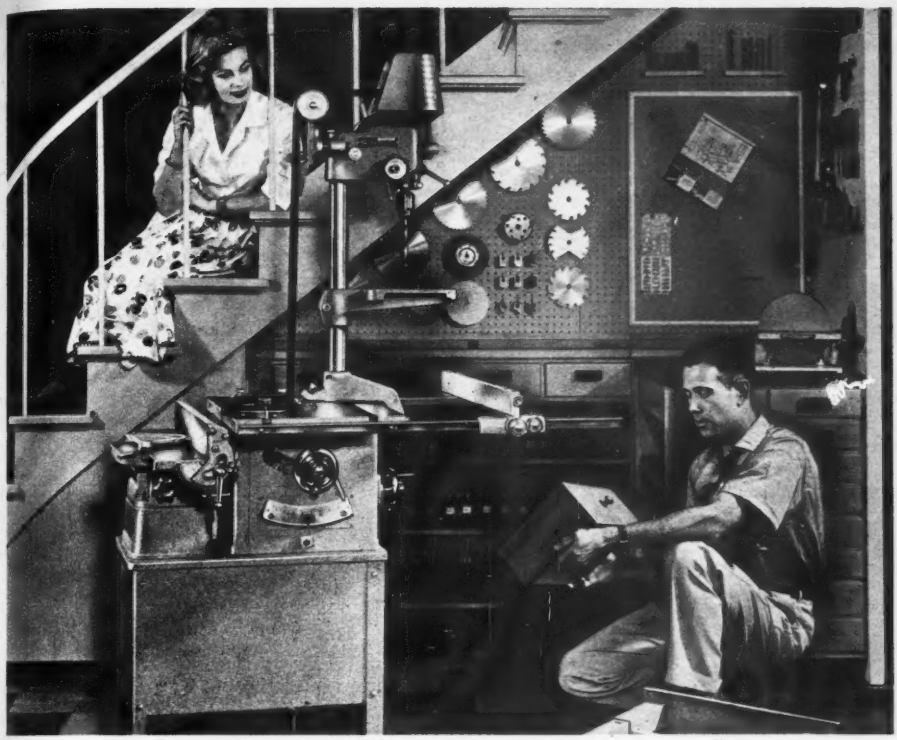
Within a few weeks Hosid formed a commercial rug cleaning company. He named his new cleaner Easy Glamur, and he and two other men went from door-to-door offering to clean all the rugs and upholstery in the house for $50.

The big break came when Hosid got a phone call from the merchandising manager of one of the largest department stores in Syracuse. The man told him his wife had used Easy Glamur and thought it was wonderful. Could Hosid bottle it for sale in the store?

By the end of the year the store had sold over $16,000 worth of Easy Glamur. Hosid sold his welding and water softener business and went into full-time production of his amazing cleaner.

Company profits were so good that by 1956 Hosid moved into a new factory with 300,000 feet of working space. In 1957, for the first time, Hosid put his Easy Glamur auto upholstery cleaner on the market. He estimates that combined

[*Continued on page* 178]



BIG IDEA FOR SMALL SPACE

New Advanced Design DELTA SHOP

Combination of 4 full size tools does 95% of all workshop jobs—yet takes space only 3 feet square!

If you want a *real* shop, but don't have a lot of space, the DELTASHOP is for *you*. It's the most *practical* all-purpose combination tool built!

Here's why: In a space just 3 feet square it puts at your finger tips a powerful 9" tilting arbor circular saw, a 4" jointer, an 11" drill press, and an 8½" disk sander—all mounted on one stand and powered by one motor. And because Delta-Shop is a combination of *full size* tools (not attachments) you can buy it all at once (as little as 10% down), or the easy Tool-At-A-Time way.

IT'S SO EASY TO OWN THE BEST!

Because Delta makes the world's most *complete* line of combination, all-purpose and individual power tools, you can choose tools exactly right for *you*. And you'll have the "newest look" in the world's finest power tools.

BUILD THIS SPACE-SAVER SHOP

Delta experts designed this shop so that you can build it. Easy-to-follow plans and the New Delta Reference Guide are yours—FREE—just send a post card with your name and address to: Delta Power Tool Division, Rockwell Mfg. Co., 556B N. Lexington Ave., Pittsburgh 8, Pa.

Do it now—then see all the New Advanced Design Delta Tools at your Delta Dealer. (He's listed under "TOOLS" in the Yellow Pages.) Or at leading Department, Hardware, and Building Supply Stores.

DELTA POWER TOOLS

another fine product by

ROCKWELL

PELLET FIRING "45" CAL. AUTOMATIC Magazine Loading Ammunition Clip — Has Automatic Slide Action — Over 15 Moving Parts

$1.00

Fires 8 Rounds

An automatic full size model of a high powered "45" caliber automatic pistol that looks and feels just like the real thing and contains over 15 moving parts. Loads 8 complete rounds in the magazine clip which snaps into the hard butt just like an army "45". Then fires 8 bullet-like pellets as fast as you can pull the trigger. You've got to see the automatic slide action and feel the power to believe it! Great for shooting fun. This is the most authentic model gun we've ever seen.

Learn the Working Mechanism of a "45"

This accurate, model of a high powered "45" comes to you disassembled with all the working parts of a "45". It assembles in a jiffy and full instructions are included so that in no time at all you'll learn working parts of an automatic. Comes with instructions, full supply of pellets and man-sized silhouette target.

10 Day Free Trial

Try it for 10 days free. If you are not 100% delighted simply return after 10 days for prompt refund of full purchase price. Don't delay! Order now! Simply send $1 plus 25c shipping charge to:

HONOR HOUSE PRODUCTS Dept. AP-12
Lynbrook, N. Y.

NEW, IMPROVED CALCULATOR FOR WOODWORKERS only 25c

Instantly gives information on lumber, nails, concrete mixes, painting materials, etc. Convenient, simple to read. Just set dial for nail specifications, to convert linear to board feet, find bit sizes for screws, compare characteristics of woods. 6" diameter heavily varnished cardboard. Send 25c, no stamps, please to Greenlee Tool Co., 2342 Columbia Avenue, Rockford, Illinois.

CLOGGED SEWERS?
CLEANED INSTANTLY
SAVES PLUMBING BILLS —

CHICAGO—Feb. 1st. Just introduced is a Free Booklet on a New Discovery which enables the Home Owner, Janitor, or Factory Maintenance to clean any Clogged Sewer Drain.

Yet anyone can operate this new Plumbers Flushing Gun which releases air pressure on a solid shaft of water cleaning the most stubborn stoppages up to 200 feet. TOILETS, SINKS, URINALS, BATHTUBS, FLOOR DRAINS, and HOUSE-TO-STREET SEWERS clogged with Grease, Rags, Sand, Roots, and paper melt away instantly when struck by the Hammer-like blow of this new unit.

There is no need to remove wall or pipe, or Grease Trap. A special attachment allows water to flow from the Meet through the Gun while air is released on the pipe. Vents or stacks are no obstacle, as force tends to strike wherever the water lays. But now, what is this Plumbers Flushing Gun worth in COSTLY PLUMBING BILLS SAVED? Tear this Ad out—and write your name and address beside it for FREE BOOKLET. Obey that urge. No agent will call. A postcard will do (Chicago Phone Kildare 5-1702) MILLER SEWER ROD CO., DEPT. MI-F, 4640 N. Central Ave., Chicago 30, Illinois.

Clean Up In Business

[*Continued from page* 176]

sales of his two cleaners will approach $2,000,000 for 1957 and he is convinced his annual gross capacity will eventually reach $10,000,000 or more.

His products are sold all over the country in department stores, hardware, food, variety, drug and auto stores in half-pint sizes, for 98 cents all the way up to five-gallon drums for $22.50. Counting the sales representatives he has in all major cities in the country, Hosid's list of employees runs into the hundreds. Jack Hosid is really cleaning up on Glamur. •

Manned Space Scouts

[*Continued from page* 65]

with a central reclining seat for the pilot and a navigation deck with two anti-acceleration beds for take-off and rest. Above these are an instrument compartment and radar gear in the nose cone. Pressurized blisters in the pilot house permit full ground visibility during landings through a system of reflecting mirrors. Full instrumentation, including miniaturized electronic computers, facilitate changes of orbit and maneuvers in space. A crew of three is carried with two men always on duty while the third rests. Flights up to three days duration are possible. For peacetime observation duty, a battery of cameras are carried in wing-tip pods. In wartime these are replaced by three missiles.

The three stage "booster" which launches our space scout into its initial orbit takes advantage of a recent improvement in rocket technique—the solid propellant type rocket. This is equal in thrust efficiency with the more widely used liquid fuel rocket engine. The solid propellant type is a simple tube filled with a dry explosive fuel, terminating in a combustion nozzle at its lower end.

Grouped in various arrangements, standardized propellant units can form the steps of a highly efficient three- or four-stage vehicle. This system has already been proven practical by the Air Force's Project Farside. Launched from a balloon at a height of 100,000 feet, this four-stage research rocket reached an altitude of 4,000 miles. MI's booster elements are a more powerful version of Farside, employing a larger number of propulsive units to lift the greater weight of our space scout. Together, they form an "eye in the sky" that may some day protect the free world from domination by a totalitarian moon. •

GIVE YOURSELF A RAISE in '58

Make $20 to $30 a Week Extra Income in Spare Time

Here is 1958 — are you going to get ahead faster this year? How—ask the boss for a raise? That doesn't always work. Here's an idea—be your own boss in spare time and give yourself a raise. $20 to $30 a week extra money is easily possible with the machine and the plan offered in this ad.

Earn up to $3 or $5 an Hour with FOLEY SAW FILER

Here is a steady repeat CASH business you can start in your own basement or garage and make up to $3 or $5 an hour in your spare time. You can file all hand saws, also band and crosscut circular saws on the Foley Saw Filer. The adjustments are simple—there is no eye-strain—and you can start right away to turn out perfect cutting saws.

"My spare time saw filing business has made me $952 these first ten months."
—R. T. CHAPMAN

"I made $756 last year filing saws, and it sure comes in handy. I do this work in my spare time."
—JAMES B. WILLIAMS

"Last year's profit amounted to $3,000. Not so bad for a one-man outfit."—CHARLES C. HOUGH

"I have done 4 or 5 thousand saws in my spare time in the 4½ years since I got the outfit, and they are all coming back with repeat orders."
—LEN CREGO

Send Today For FREE BOOK "MONEY MAKING FACTS"

"MONEY MAKING FACTS" explains how you can get business from hardware stores, homeowners, farmers, carpenters, schools, mills, factories, etc. Get the facts—send coupon today for this practical, money-making plan. No salesman will call.

FOLEY MFG. CO. 215-8 Foley Bldg., Minneapolis 18, Minn.

Send me free book "MONEY MAKING FACTS"

Name_____

Address_____

Hunting And Fishing

[*Continued from page* 97]

class about equal in quality. The important thing is not the brand name, but the reputation of your dealer, the length, weight and action of the rod and the kind of fishing you do. For average trout fishing in your neck of the woods, I'd suggest an 8½-foot glass rod weighing four ounces and having medium dry fly action. A good one will cost you about $35, though you can pay up into the hundreds for a fancy bamboo rod—if you own an oil well.

● *In your very informative article on worming for trout, you neglected to include how to keep a supply of nightcrawlers. Can this be done?*

Tony Di Steffano
Boston, Mass.

Easily. Keep them in the coolest part of your basement in a temperature below 70 degrees. A wooden box about 1x½ ft. will do. Fill it with dry moss and feed your worms once a week with powdered milk or dried maple leaves. Keep moss damp but not wet. Too much moisture and heat will kill worms in one day. Look your worms over every few days and cull out all sick and dead ones—just in case.

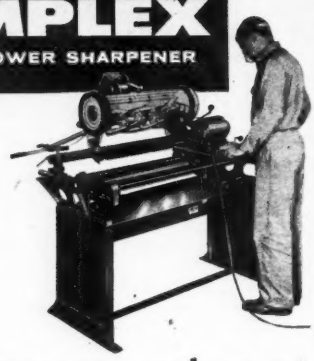
● *A friend tells me that there is now good trout fishing in Arkansas. Is he pulling my leg or is the fishing there worth a try? I've always thought of Arkansas as a bass fishing state.*

Bill Martin
Tulsa, Okla.

Your friend is right, good trout fishing is now to be had in some rivers in Arkansas that were once famed smallmouth bass streams. The building of dams made the change, then stocking of trout did the rest. The very deep lakes behind the new dams cooled the water in the rivers enough to make them suitable for trout for quite a distance below the dams. Try the White River below the Bull Shoals Dam, the Norfolk River below the Norfolk Dam and the Little Missouri River downstream from the Narrows Dam.

[*Continued on page* 183]

NEW MODEL 400
SIMPLEX
LAWNMOWER SHARPENER



Small investment returns **big profits!**

Many Exclusive Features . . .

The NEW SIMPLEX is the fastest, most accurate straight-line lawnmower grinder ever built . . . gives you all these advantages:

- Grinds all mowers—reel type, rotary, hand or power, any size.
- No dis-assembly needed, gas and oil remain in engine, support bar rotates.
- Grinding head feeds both horizontally and vertically, turns 90° for bed knives.
- Fast, positive adjustments, 4-point support on steel base with leveling screws.
- Rugged, long life construction and many other features.

Get the facts on the new SIMPLEX 400 before you buy any sharpener. ***Send for free brochure today!***

The Fate • Root • Heath Company

Dept. MI-2 • Plymouth, Ohio

2 WAY PORTABLE RADIO SET

SENDS—RECEIVES UP TO 18 MILES AS SHOWN with built-in antenna or hundreds of miles with outside antenna! Works on 80 and 40 meter (Novice) amateur radio-bands—also Aircraft and overseas broadcast (3 to 8 mc). PORTABLE SELF-CONTAINED POWERED WITH STANDARD PORTABLE RADIO BATTERIES. NO AC PLUG-INS NEEDED! Take it with you everywhere you go—on trips, vacations, camping—Keep in contact with home, friends. Has 5 watt crystal controlled transmitter—Sensitive Regenerative Receiver. Send-Receive switch. Wt., only 3 lbs. Size, only 6"x4"x4". TESTED—PROVEN—SIMPLIFIED—PRACTICAL—Full information given on quick easy to get license.

SEND ONLY $3.00 (bill, ck, mo) and pay postman $11.95 COD postage on arrival or send $14.95 for postpaid delivery. Complete kit includes all parts, tube, coils plastoid cabinet, easy instructions. (Set of batteries $2.95; crystal $1.25.) COMPLETELY WIRED AND TESTED POSTPAID $19.95. A regular $49.95 value—Order now before price goes up. GUARANTEED—AVAILABLE ONLY FROM: **Western Radio, Dept. BNI-2, Kearney, Nebr.**

GUNS DERRINGER

START COLLECTING NOW!

- ☐ Derringer
- ☐ German P-38
- ☐ Colt Cobra .38
- ☐ German Luger
- ☐ German Mauser
- ☐ Spanish Mozley
- ☐ Russian Tokarev
- ☐ Japanese Nambu
- ☐ Italian Brevettata
- ☐ Frontier .44 Colt
- ☐ Belgium Automatic
- ☐ Colt .45 Automatic
- ☐ Czechoslovakian Pistol
- ☐ S & W .38 Police Special
- ☐ Iver Johnson Cadet SSS
- ☐ Mauser 7.65mm Automatic

$3.95 EACH
POSTPAID
FOLDER 10c

AUTHENTIC REPLICAS
Reproduced in Actual Size, Design and Balance. Made of Solid Cast Aluminum. Finished in Gun-metal Black.

©1957

• Re-man trophies for Rumpus Room, Cabin, Etc. •

LYTLE NOVELTY CO.

Send Cash, Check or M.O. No C.O.D.'s. No Canada Orders. Add 4% Sales Tax in California.

2656- Q-2 Fashion Avenue, Long Beach 10, California

Underwater TV

[*Continued from page 71*]

and a field 20 ft. across. In clear water and with a bright sun, marine cameras operate efficiently to a depth of 180 feet without artificial illumination. Deeper than this, in foggy water, bad weather or at night, spotlights are used.

Undersea TV cameras range in weight from 30 to 650 pounds but most models are weightless when submerged. Thus they can be used from a small boat as well as a ship. Modest power demands can be supplied by a small portable generator. The new models have remote controls by which the operator on the surface can focus, adjust the iris, change lenses to wide-angle or close-up or point the camera in a new direction.

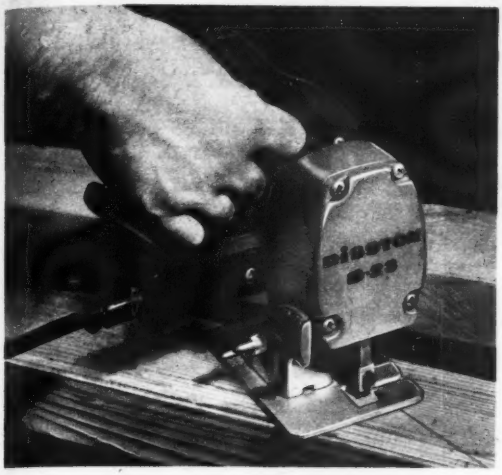
Besides marine salvage jobs, our electronic eye can be put to good use in undersea repairs (see cover). Engineers and foremen view progress from the surface and call instructions down to the divers actually doing the work. In the past ships had to be drydocked for a thorough hull inspection. With UTV cameras maneuvered by divers the same going-over can be given to a hull while the ship is afloat.

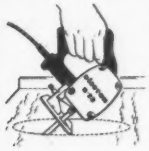
Only a limited number of marine video units have been produced in this country, by RCA and the Admiral Corp., among others. As a country, England seems to have taken the lead in UTV development. Pye Limited (England and Canada) probably is No. 1 in the field.

The U. S. Navy has a full-color television system for underwater work. One of the Navy's newer developments is a hydrocopter (underwater helicopter), a four-propeller camera transporter that can hover in mid-water or move any way.

The hydrocopter may become one of the ultimate tools of undersea salvage. This remote unit, operating at the end of a long cable, can carry an underwater camera for an eye and all kinds of tongs, scoops, rakes and "hands" for working tools. Controlled by a distant operator, it could effect marine recovery jobs quickly and efficiently. In wartime it could be sent into a harbor by a ship or sub lying several miles offshore to spy on enemy fortifications or to mine enemy ships. •

Zips through 2 x 4's . . . cuts ¼" steel plate . . . cuts ½" aluminum plate





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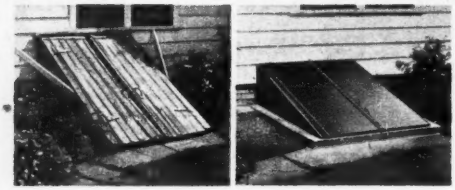

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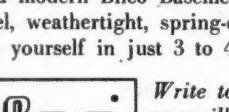

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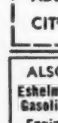

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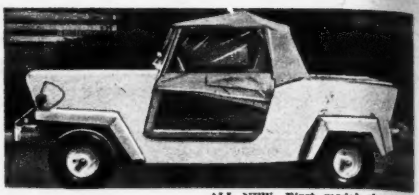

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Hunting And Fishing

[Continued from page 179]

● *Is the nightcrawler or the garden worm better for trout? Should I fish worms along the banks or in the middle of the stream? Do I need a leader? If so, how long? Should I use a spinning rod or a fly rod?*

Ben Webb
San Francisco, Calif.

I'd say for small meadow streams the garden worm is best, but for big rivers you would do better with nightcrawlers. However, nightcrawlers are excellent in any size stream in early spring when the streams are high and roily. I fish worms along the banks because trout normally look for them there. I like a fly rod for small streams and a spinning rod for large rivers that I can't wade. A 7½-foot nylon leader is almost essential for good fishing. I like a six-pound test leader for heavy, cloudy water and a three-pound test line for clear water.

● *I would appreciate information as to where I may obtain the salmon flasher mentioned in Fooling The Cagey Walleye (July '57 MI).*

Frank Borowski
Milwaukee, Wis.

Almost any sporting goods store in the landlocked salmon country of Maine will mail you one. But all you need for walleyes is a spoon that flashes or a string of spoons. Fish this deep with a worm or minnow on a leader behind the flasher and troll slowly in deep lakes or rivers. I have seen some of these sold and used in the Rainey River Country of Minnesota, one of the best walleye waters.

● *I'd like to tie my own dry fly leaders. What is the best taper for nylon to be used with an HEH line?*

Tom Perkins
Philadelphia, Pa.

The best taper is a matter of opinion. For a nine-foot nylon leader, I use the following taper: 32 inches of .0157, 32 inches of .0138, 12 inches of .0110, 12 inches of .0980, and 20 inches of .007. Tie strands together with barrel knots. I also carry leaders tied with a heavier butt, in case of strong winds.

Good luck. Keep the letters coming. ●

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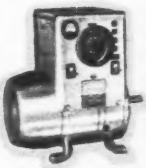
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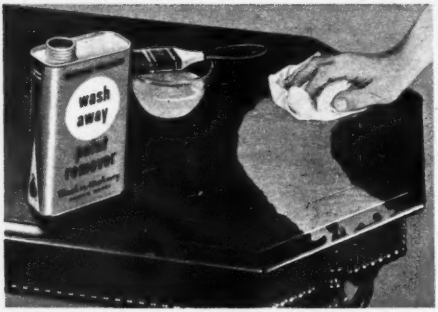

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Manned Space Scouts

[*Continued from page* 65]

a space station, it would be very difficult to shoot them down.

These orbital scout ships can be used for other things, too. Properly armed with missiles, space mines, or other offensive weapons, they could rise into orbit and destroy any enemy space station.

Scientific experiments themselves could be carried out in orbital scouts. This would allow quick determination of solar radiation, cosmic rays and other phenomena in addition to studies in astronomy and weather.

We are going to need such a station as a permanent laboratory in the sky, to say nothing of making it into a space-going filling station where space ships bound for the Moon and the planets may refuel. The utility of the orbital scout in no way removes the need for a space station, but serves as a controlled "eye in the sky" which will hasten Man's conquest of space. •

Marry The Right Girl?

[*Continued from page* 87]

vast majority had only between one and two hours of freedom!

7. *Early marriages break up more readily than those entered into at a mature age.*

A recent study in Ohio revealed that marriages last longer if the girl is 20 or younger on her wedding day.

8. *A husband should continue to romance his wife after marriage.*

This is a tricky one. Of course, flowers, candy and gifts are important; so are the whispered words of love. But Dr. Lee F. Deets, sociology professor at Hunter College in New York City, warns married couple against accepting the "cardiac-respiratory" definition of wedding life. He says: "This is the attitude that the heart must flutter and the breath come fast or it isn't love any more."

9. *All things considered, marriage is a big gamble.*

How many times have you heard this? Well, listen to Drs. Judson T. and Mary G. Landis of Michigan State College: "In spite of the publicity given to marriage failures, the unhappy marriages are still in the minority."

The odds are in your favor. Good luck. •

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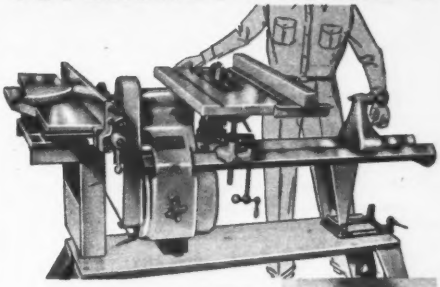

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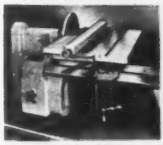

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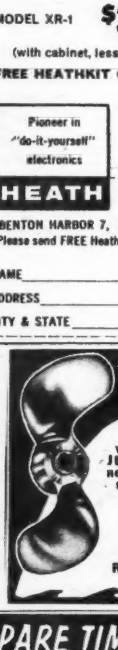

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Small Foreign Cars

[*Continued from page* 94]

tomatic clutch for starting or when the free wheel is locked out. DKW is the more powerful model, available in a two or four-door sedan and station wagon with a surprising 80 mph maximum. SAAB has a streamlined two-door sedan body.

The Rootes group has two small family models—the Hillman Minx and Hillman Husky. One of the best styled jobs in the small car field, the Minx is beautifully finished, roomy and lively, with an 80-mph top speed. A little gem of a station wagon has just been added to the line. Its smaller relative, the Husky, propelled by an L-head four-cylinder engine specially tuned with economy in mind, is something between sedan and station wagon with a single rear door.

Britain's Ford works is shipping two small sedans, the two-door Anglia and four-door Prefect, and their station wagon partners, Escort and Squire.

As orthodox as the 600 is unusual, Fiat's 1100 sedan has a big reputation as a sporting performer. Its folding rear seat gives it almost station-wagon capacity. Simca's lively Aronde, styled with a touch of Parisian elegance, shows that France can build a good small orthodox car.

Shapely belle of the Borgward group is the Isabella. All-independent suspension gives an excellent ride at the expense of a little oversteer. There are two-door sedans and station wagons and for maximum performance there's the Touring Sport with souped-up engine and extra chrome. But the wolf-in-sheep's clothing theme has never been more fully exploited than in Sweden's Volvo PV 444L. This mild-looking little two-door sedan packs a punch that will leave a lot of the sports car boys opened-mouthed. It has a genuine 95-mph maximum with road holding ability and brakes to match.

Others in the sports sedan category announce their intentions more clearly; cars like the MG Magnette, Triumph sedan, Sunbeam Rapier and the Alfa Guilietta promise fun for the family man, plus custom finish and equipment.

There you have it. Small foreign cars are becoming increasingly popular with American buyers. While Detroit is not yet overly concerned about them, one thing is certain—they are here to stay. *

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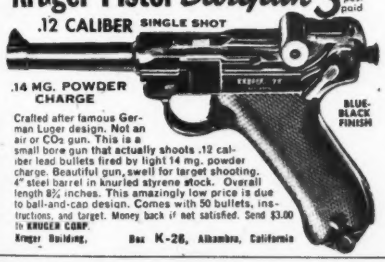

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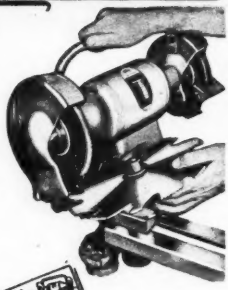

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A $10 Telescope

[*Continued from page* 174]

lap. This can be done with a hack saw. Moisten the hack saw blade and just keep slicing away as shown in the photo. Don't worry if the pitch splinters. It will anyway. Pitch is a rambunctious material and in some ways is supposed to be related to the devil. At this point you will probably agree.

There is just one important thing you must heed in cutting the facets and that is to avoid cutting them so that a corner of one is exactly at the center of the pitch lap. Look at the drawing. The small circle indicates the exact center of the lap. Notice that it does not coincide with a corner of a square. It should be offset about ⅜ inch. This is necessary and important in order to prevent the mirror from polishing in rings.

After you have finished cutting the pitch you will be rather disappointed at the sorry looking mess that your lap now exhibits. Don't despair. The lap will come to reason! Again moisten the mirror with the sudsy soap solution and press it over the pitch lap. Again let it stay this way overnight. You can see that telescope making requires a good deal of patience. Allowing the mirror to remain in contact with the pitch lap overnight will make the pitch tool reconform to the curve of the mirror.

Polishing

And now for the actual polishing operation. Get a clean quart milk bottle and fill it a little less than halfway with warm water. Dump the package of rouge which came with your kit into the bottle. Place your hand over the open end and shake the contents up and down thoroughly. If you haven't done so up to this point you should now don old clothes because the rouge solution will stain everything a gory red. You will look like a butcher before the evening is over! Procure a half-pound jar with a screw top. Punch a hole in the top of the lid and through it force the rubber tip of the medicine dropper mentioned at the beginning of this story. Over the top of the jar place a triple thickness of cheesecloth. Shake the bottle containing the rouge solution thoroughly and pour about half of it into the jar using the cheesecloth

[*Continued on page* 190]

Outdoor Vacations is offering a free travel service to sportsmen through retail sporting goods stores all over the country. It books your reservation, furnishes you information on how to go, what to wear, what equipment to take along, etc., and even includes a "go now, pay later" financing plan as part of the service. For further details write Outdoors, Inc., 103 Guitar Bldg., Columbia, Mo.

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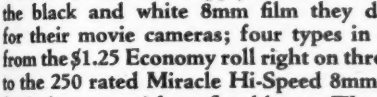

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[*Continued from page* 188]

as a filter. Discard the cheesecloth with any remaining particles of rouge. Stir the rouge solution a bit and use the combination jar lid and medicine dropper as an applicator. Squirt a dropper full of the rouge solution over the mirror and start polishing.

To polish, use the same stroke that you employed in grinding. In other words, two *inches forward and two inches back.* Twist the mirror in your hands (a slight clockwise turn ever so often) and take an occasional step around the barrel. Time yourself. You may have to add some more rouge after five or ten minutes, especially if the mirror starts to stick. Sticking can sometimes be eliminated by carefully sliding the mirror off the lap and then bringing it down again. If the mirror persists on sticking despite your best efforts, you can easily eliminate this by a reapplication of the sudsy soap solution to the surface of the pitch lap. Add some more rouge and continue polishing. The soap acts as a lubricant and permits the mirror to slide over the tool until both surfaces are again in surface contact. At this point we will stop. We will continue polishing our mirror in next month's issue. •

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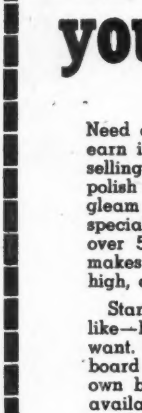

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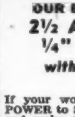

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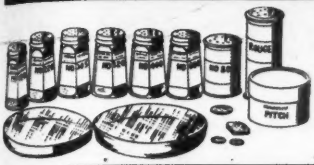

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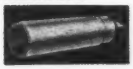

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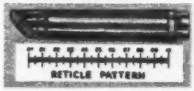

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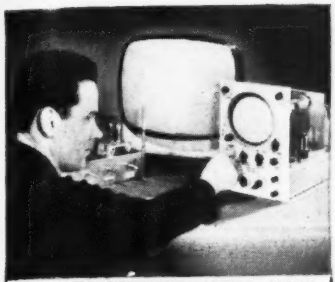

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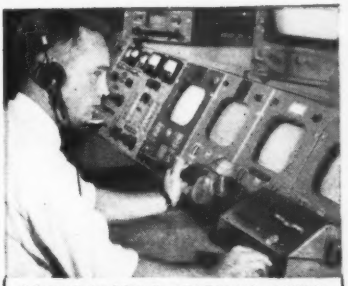

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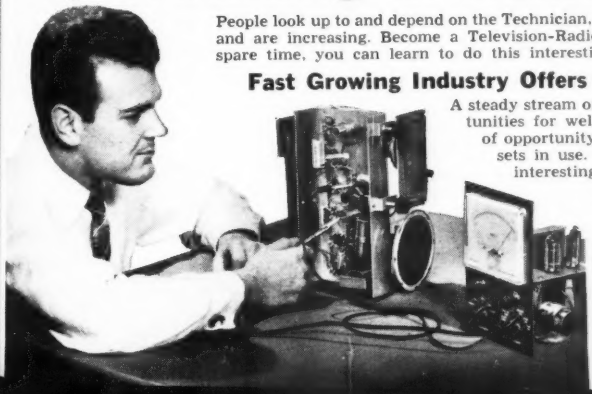

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